U.S. NATIONAL COMMISSION ON LIBRARIES AND INFORMATION SCIENCE

A COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION

FINAL REPORT, VOLUME 1

DECEMBER 15, 2000

FIRST DRAFT
NOVEMBER 27, 2000

This draft is for discussion and public review only,
and is not necessarily the final position of the Commission.

NCLIS

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The National Commission on Libraries and Information Science is a permanent, independent agency of the federal government, established in 1970 with the enactment of Public Law 91-345. The Commission is charged with:

- advising the President and the Congress on the implementation of policy;
- conducting studies, surveys, and analyses of the library and informational needs of the nation;
- appraising the adequacies and deficiencies of current library and information resources and services; and
- developing overall plans for meeting national library and informational needs.

The Commission also advises federal, state, and local governments, and other public and private organizations, regarding library and information sciences, including consultations on relevant treaties, international agreements and implementing legislation, and it promotes research and development activities which will extend and improve the nation's library and information handling capability as essential links in the national and international networks.

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Suggested Citation:

U.S. National Commission on Libraries and Information Science.

A comprehensive assessment of public information dissemination, final report. Washington, DC: U.S. Government Printing Office, 2000.

United States National Commission on Libraries and Information Science

December 15, 2000

[Transmittal Letter]

TABLE OF CONTENTS

FOREWORD

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

A. THE ROLE OF NCLIS

B. FINDINGS

C. CONCLUSIONS

D. RECOMMENDATIONS

Strategic Recommendations

Other Recommendations

A COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION

A. THE ROLE OF NCLIS

The United States National Commission on Libraries and Information Science (NCLIS) is an independent agency charged by its enabling legislation (Public Law 91-345) to take a leadership position on matters pertaining to the library and information needs of the nation. Specifically, 20 U.S.C. 1504(a)(1) says that the Commission shall "advise the President and the Congress on the implementation of national policy by such statements, presentations, and reports as it deems appropriate."

In fulfillment of that statutory mandate, the Commission throughout its 30-year history has had an abiding interest and concern for studying ways the government can improve its public information dissemination practices. However, in the last three years, largely because of the intensified interest in the federal government's use of the World Wide Web and the Internet as the preferred medium for distributing government information to citizens and other elements of society, the Commission has focused squarely in three closely related studies, conducted sequentially, on policy, management, standards, accessibility, and other major issues and concerns that have arisen as a result of this shift in access and delivery channels from pre-Internet modes such as ink-on-paper, microfiche, and CD-ROM, to Web and Internet modes.

Four years ago, in 1996, the Government Printing Office was asked by the Congress to investigate the increasing proliferation of formats, mediums, platforms, and protocols being utilized by federal agencies to disseminate government information products. The GPO turned to NCLIS to assist in undertaking the task. NCLIS engaged Westat, Inc., a survey research firm, to survey a sample of over 300 products in a cross section of 24 different agencies in all three branches. A final report was published on this first of the three studies on March 30, 1999.[1]

Then in August 1999, after consulting with Department of Commerce officials and members of both the Senate and House Committees holding jurisdiction over science and technology issues (very soon after the announcement by Commerce to close the National Technical Information Service (NTIS) and shift its paper, microfiche, digital archives, and bibliographic database to the Library of Congress), the Commission launched a second major study, this time focused primarily on NTIS. A final report on this second of the three studies was published in March 2000.[2]

In both the 1996 GPO-requested study, and the follow-on 1999 NTIS study, the Commission observed that both the issues and concerns surrounding the proliferation of electronic formats for disseminating

[1] *Report on the Assessment of Electronic Government Information Products*, prepared by Westat, Inc. under a contract issued by the National Commission on Libraries and Information Science and commissioned by the Government Printing Office, March 1999; http://www.access.gpo.gov/su_docs/nclisassessment/report.html.
[2] *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress*, Washington, DC: U.S. Government Printing Office, March 16, 2000; http://www.nclis.gov/govt/ntis/presiden.pdf.

government information to the public, and the issues and concerns surrounding the proposed transfer of the functions, programs, and resources of NTIS to the Library of Congress, should not be viewed as isolated events. Rather, the Commission concluded that those issues were both a part of the broader fabric of an even larger question—how the government should reform its laws, policies, programs, and practices for disseminating information to the public in the Internet Age.
The Commission therefore warmly welcomed the requests by both Senator John McCain and Senator Joseph Lieberman to undertake this broader study, and we urge readers to keep this larger context in mind in reviewing the findings and recommendations contained herein.

In its 1975 publication entitled *Toward a National Program for Library and Information Services: Goals for Action*, the Commission offered a long-range program for the development of an integrated nationwide network of library and information services. The following statement appears in that landmark document:

> The Commission's current goal is to develop a plan for a flexible network of information services to meet the immediate and foreseeable information requirements of the greatest possible number of people. The Commission will therefore continue to concentrate its efforts in the years ahead on this ideal:
>
> *To eventually provide every individual in the United States with equal opportunity of access to that part of the total information resource which will satisfy the individual's educational, working, cultural and leisure-time needs and interests, regardless of the individual's location, social or physical condition or level of intellectual achievement.*[3] [emphasis added]

In working toward the attainment of this goal, the Commission recommends in this report programs and enabling federal legislation that are based on existing programs for the dissemination of public information resources, as well as new programs as appropriate and necessary. One such recommendation is that the United States Government formally recognize and affirm the concept that public information is a strategic national resource. The success of such a goal, and of these recommendations, is dependent on the acceptance and full support of the library profession, the information community—both public and private—the Congress, the Administration, and, most importantly, the people of the United States.

> The Commission recommends that the United States Government formally recognize and affirm the concept that public information is a strategic national resource.

B. BACKGROUND

THE ISSUE

Public sector information, or simply government information, has very rapidly become in the span of just the last few years one of the most critical strategic assets possessed by every nation state, on a par with national wealth, land, and capital. The Internet and the World Wide Web are the reason. Public Sector information has always played a very important role in the political, economic, and social affairs of every country, but the advent of the Internet and the World Wide Web has dramatically

[3] U.S. National Commission on Libraries and Information Science, *Toward a National Program for Library and Information Services: Goals for Action*, Washington, DC: U.S. Government Printing Office, 1975, page xi.

escalated the importance of government information because of the power of the Internet to tremendously increase its availability and accessibility in a great variety of different electronic formats and mediums.

> The central challenge this report takes up is to recommend to the President and the Congress a series of steps to maximize the **diffusion** of the government's data, information, and knowledge resources to all sectors of society, down to the level of the individual citizen, and to help all of those sectors **utilize** that knowledge effectively and efficiently in the pursuit of their respective personal, family, career, institutional, or other goals and objectives.

In short, a very high percentage of this Nation's knowledge resources are invested in its government data, document, and literature assets, but those assets are a very long ways, as yet, from being conveniently, cost-effectively, and equitably available and accessible to all sectors of American Society despite impressive initiatives that have been taken in recent years. Those assets are currently strewn across broad physical and electronic landscapes of tens of thousands of websites and millions of web pages, hundreds of thousands of electronic databases, untold numbers of paper document collections, and in countless files, records depositories, clearinghouses, and archives across the country and even abroad.

The central challenge this report takes up is to recommend to the President and the Congress a series of steps to maximize the diffusion of the government's data, information, and knowledge resources to all sectors of society, down to the level of the individual citizen, and to help all of those sectors utilize that knowledge effectively and efficiently in the pursuit of their respective personal, family, career, institutional, or other goals and objectives. This is a far more daunting challenge than just "strengthening the dissemination of government information."

Virtually all of the nation's hundreds of laws that have some provision or another for disseminating government information to the public, either:

- publicize a citizen entitlement and spelling out the procedures that need to be following to apply for a tangible government public benefit or service;
- publicize opportunities for the private sector to do business with, or for the federal government, either domestically in the U.S. or abroad, or both;
- publicize and disseminate the results of government's performance and operations through audits, inspections, studies, opinions, decisions taken, and so forth;
- provide for intergovernmental or interagency information interchange; or
- provide a broad legal basis for public access to government information, identifying specific exceptions and exemptions, such as the Freedom of Information Act, the Privacy Act, and so forth, or specifically exempting from disclosure large bodies of government information holdings such as those classified for reasons of national security.

However, none of these existing laws provides a rationale and statutory basis for the broad diffusion and utilization of government's knowledge assets to individual Americans, both advantaged and disadvantaged, to help them cope with their daily problems, to enlighten and educate them so that they

are better informed citizens, and to point the way to how the government's vast knowledge treasures can enhance the quality of their lives and the wisdom of their decisions.[4]

In 1998 the European Commission issued its report entitled *Public Sector Information: A Key Resource For Europe; Green Paper on Public Sector Information in the Information Society*.[5] In its report the European Union said:

> Public sector information plays a fundamental role in the proper functioning of the internal market and the free circulation of goods, services and people. Without user-friendly and readily available administrative, legislative, financial or other public information, economic actors cannot make fully informed decisions.
>
> Public information in Europe is often fragmented and dispersed and so in many instances it is less clear and intended. This situation is mainly due to differing national legislation on the ways information can be accessed and exploited, and to various practices which hamper the availability of the data. The issue at stake is not that Member States should produce more information, but that the information which is already available to the public should be clearer and more accessible to potential users.[6]

In the United States, we have a somewhat parallel situation with federal government information. That is, it is fragmented, dispersed and compartmentalized among hundreds of federal agencies. It has been created, and it is being handled and stored in hundreds of different formats and mediums, including ink-on-paper, microfiche, CD-ROM, and online electronic modes. It is organized, classified, and cataloged in many different forms, including statistical or numeric data, textual data, graphical data, geospatial data, audio and visual data, and so on. Many different bibliographic and metadata systems, sometimes inconsistent and incompatible, are being used to identify data elements such as author, subject, title, location, and so on. In addition, dozens of different hardware, software, systems, and network platforms and protocols are being utilized to handle and communicate the information between networks and systems, sometimes subject to proprietary restrictions, but without the discipline of utilizing standards and guidelines.

Moreover, in the United States, unlike much of the rest of the world, there is a strong dichotomy between the public information resources objectives and perspectives of the federal mission agencies, on the one hand, and the federal agencies with government-wide information services and information management roles on the other. In Europe, Asia, Latin America and Africa there is a much greater cohesion between elements of the government, especially in the economic sphere, but in the United States, the mission agencies are primarily enjoined by statute to respond to their respective sector or mission interests (e.g. environment, energy, space, defense, etc.). As a result, they are beholden primarily to the constituencies comprising those sectors. The President and the Congress have made it crystal clear that if federal agencies stray very far from their mandated mission domains, they do so at their own peril. Only the central service agencies serve the interests of the public at large, as well as the interests of individual mission agencies.

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[4] The one possible exception is 44 U.S.C. Chapter 19, the statute authorizing the Federal Depository Library Program (FDLP; however the lack of agency compliance and the absence of substantial consequences for failure to comply have limited the effectiveness of this statute.

[5] European Commission, Public Sector Information: A Key Resource For Europe; Green Paper on Public Sector Information in the Information Society (COM(98)585final, adopted on 20 January 1999); available at http://europa.eu.int/ISPO/docs/policy/docs/COM(98)585/gp -intro.html.

[6] Ibid, page 1.

There is also the dimension of *institutional obsolescence*. In the words of one of the Commission's advisory experts, Chancellor Donald Langenberg of the University of Maryland:

> The designs, configurations, and functions of the *Library of Congress*, the Government *Printing* office, and the Superintendent of *Documents*, were based on the dominant information technology of the second half of the previous millennium, not that of the current millennium. Therein lies a huge challenge for our federal government (not to mention our state and local governments). One of the fundamental differences between the old and the new information technologies is that the former lends itself to centralization of information-related functions, while the latter is intrinsically decentralized. Compare big central libraries, printing plants, and bookstores and warehouses with ubiquitous desktop and laptop computers linked to servers in closets all over the globe. In the old technology, it's the nodes that matter most; in the new, it's the network linking the nodes. *One should expect to see this fundamental difference reflected in the organizational and functional structure of an evolving federal public information dissemination system.* [emphasis added]

This study contends that a number of Executive, Legislative, and Judicial actions must be taken to enable what Chancellor Langenberg called the "federal public information system," or more technically the "*Federal Information Infrastructure*" concept to take its place in a meaningful way as a cornerstone in the emerging *National Information Infrastructure*, including:

1. statutory reforms to strengthen the several existing laws that govern the way the federal government is organized for public information resources management, and a major new legislative initiative, *the Public Information Resources Reform Act of 2001*, providing for the creation of a *Public Information Resources Administration* with overall focal policy leadership and oversight responsibility for the availability of and accessibility to public sector information, electronic publishing, and public information resources management; public information resources planning, management, and dissemination is elevated to the status of a major new government-wide mission;
2. important reforms in the way key federal laws are written, especially the *Paperwork Reduction Act of 1995,* and corresponding Executive Branch guidance, notably *OMB Circular A-130*, to take into account the shift from ink-on-paper and other pre-electronic formats and mediums such as microforms and CD-ROM, to Internet formats and mediums, and to give "co-equal" priority to both controlling the paperwork burden on the American public through the *Information Collection Budget* mechanism, but also recommending an *Information Dissemination Budget* concept as a way to emphasize the need for agencies to budget for pro-actively disseminating their information resources to the public, not just passively providing access to those resources;
3. major realignments in the roles and organizational location, and the consolidation and harmonization of the dispersed, fragmented, and compartmentalized missions and functions of key agencies with government-wide public information services and information management missions and functions, including the Government Printing Office (GPO), the National Technical Information Service (NTIS), the Government Information Locator Service (GILS), and other components;
4. providing a statutory basis for, and institutionalizing three key public information management concepts: Permanent Public Availability, Preservation of Government Information, and Authentication of Government Information; and harmonizing the former two concepts with a fourth concept already statutorily defined—Permanent Records Retention; and
5. "fine tuning" adjustments in the rules, regulations, standards, guidelines, procedures, and systems relating to individual agency, interagency, and intergovernmental information interchange,

sharing, and standards development, including technical standards such as the use of XML and PURLS.

A WORKING DEFINITION OF PUBLIC INFORMATION

> We define public information as information created, compiled and/or maintained by the federal government. We assert that public information is information owned by the people, held in trust by their government, and should be available to the people except where restricted by law.
>
> *Principles of Public Information*
> *U.S. National Commission on Libraries and Information Science*

We begin with a definition of "Public Sector Information." Because there is no agreed-upon uniform statutory definition of the term "public sector information" or simply "public information," for the purposes of this study the Commission chooses to utilize the definition set forth in the preamble to the *NCLIS Principles of Public Information*[7] and in the provisions of Title 44 of the U.S. Code as a working definition. The preamble reads:

> We define public information as information created, compiled and/or maintained by the federal government. We assert that public information is information owned by the people, held in trust by their government, and should be available to the people except where restricted by law.

In short, the Commission strongly believes the public has a fundamental right to the information produced by the government, conditioned only by the legal exemptions stipulated in various statutes such as the Freedom of Information Act, the Privacy Act, national security legislation, and a few other laws.

Nevertheless, several other existing, and important, statutory definitions of public information need to be recognized because the absence of a standard definition in the United States Code has caused considerable consternation among stakeholders who have tried to reform the government's public information dissemination machinery in the past.

For example, Chapter 19 of Title 44 U.S.C., dealing with the Federal Depository Library Program, states that "[g]overnment publication as used in this chapter, means informational matter which is published as an individual document at government expense, or as required by law," and that "[g]overnment publications, except those determined by their issuing components to be required for official use only or for strictly administrative or operational purposes which have no public interest or educational value and publications classified for reasons of national security shall be made available … for public information."

Chapter 34 of Title 44 U.S.C.—the Paperwork Reduction Act—also supplies a very broad definition, stating that "the term 'public information' means any information, regardless of form or format, that an agency discloses, disseminates, or makes available to the public."

[7] The complete statement of the NCLIS Principles of Public Information is available in Appendix 15 and at http://www.nclis.gov/info/pripubin.html.

In terms of existing federal government regulations, OMB Circular A-130, which governs Executive Branch information resources management practices in general, and public information dissemination practices in particular, provides the following definition of government information:

a. The term "government information" means information created, collected, processed, disseminated, or disposed of by or for the federal government.

b. The term "government publication" means information which is published as an individual document at government expense, or as required by law (44 U.S.C. 1901).

c. The term "information" means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

d. The term "information dissemination product" means any book, paper, map, machine-readable material, audiovisual production, or other documentary material, regardless of physical form or characteristic, disseminated by an agency to the public.[8]

It becomes apparent from the above A-130 definition that there is substantial difference between "information dissemination product" as defined therein, and the concept that all government information not otherwise exempted by statute, be available to and accessible by the public, as enunciated in this Commission's Principles of Public Information and other section of Title 44 of the U.S. Code as they pertain to public information.

Finally, records of government accessible under the Freedom of Information Act ("FOIA") also can affect further dissemination and access, since once made available, this information can be redisseminated without restriction. Federal government executive branch information subject to disclosure under FOIA is defined as follows:

> Each agency, in accordance with published rules, shall make available for public inspection and copying:
> (A) final opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of cases;
> (B) those statements of policy and interpretations which have been adopted by the agency and are not published in the Federal Register;
> (C) administrative staff manuals and instructions to staff that affect a member of the public;
> (D) copies of all records, regardless of form or format, which have been released to any person under paragraph (3) and which, because of the nature of their subject matter, the agency determines have become or are likely to become the subject of subsequent requests for substantially the same records; and
> (E) a general index of the records referred to under subparagraph (D).

Nevertheless, FOIA recognizes that agencies can withhold certain types of information in their possession. As explained in the House Report accompanying the Electronic Freedom of Information Amendments of 1996:

> The nine exemption categories are:
>
> - Information that is classified for national defense or foreign policy purposes;

[8] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130 revised, Washington, DC: Office of Management and Budget, 1996; http://www.whitehouse.gov/OMB/circulars/a130/a130.html.

- Information that relates solely to an agency's internal personnel rules and practices;
- Information that has been clearly exempted under other laws;
- Confidential business information, such as trade secrets;
- Internal government deliberative communications about a decision before an announcement;
- Information about an individual that, if disclosed, would cause a clearly unwarranted invasion of personal privacy;
- Law enforcement records, particularly of ongoing investigations;
- Information concerning bank supervision; and
- Geological and geophysical information, such as maps.[9]

In short, there are inconsistencies in these various definitions of public information that need to be corrected, and this study makes specific recommendations as to how those inconsistencies may be eliminated.

THE INFORMATION MANAGEMENT PROCESS

The functions of identifying, acquiring, organizing, announcing, accessing, disseminating, and preserving information are basic information content management functions. Concomitant with the issue of access to information are the issues of optimizing its usefulness, ensuring its authenticity and integrity, and guaranteeing its retention and archiving.[10] At present there are no automated tools that perform these functions in a uniform, reliable, consistent manner. While the Internet, and its tools like the World Wide Web, search engines and categorization aides like those found in Yahoo, have brought new opportunities—and challenges—the basic information management functions still require human physical and intellectual efforts.

Identifying. In the context of information management process, everything begins with identification, that is, knowing that some specific information exists that needs to be subjected to the information management process. This step is often taken for granted, and therefore overlooked, but it is essential to the entire information management process.

Acquiring. Once information is identified, that is, it is known to exist, it must be acquired in order for the other steps to take place. This acquisition may take the form of reading it on a website and noting its location, or it may mean actually obtaining a copy in some tangible form, such as paper or microfiche, or downloading an electronic file. Without acquiring the information, there is no information to organize, announce, access, disseminate or preserve. Like identification, this step is often taken for granted, and therefore overlooked, but it is essential to the entire information management process. In order to assign a classification number, prepare a cataloging record or a bibliographic citation, assign indexing terms or write an abstract, the information that is to be described must first be acquired.

[9] U.S. House of Representatives, Committee on Government Reform and Oversight, *Electronic Freedom of Information Amendments of 1996*, House Report 104-795, Washington, D.C.: U.S. Government Printing Office, September 17, 1996, page 6.

[10] The term archiving as it is used here refers to preserving the information for reference use, not preservation of official records as it is defined the Federal Records Act.

Organizing. Information has only potential power. Quantity is not quality, stuff is not information, and information is not power, it's only potential power. The power of information exists only when it can be put into the mind of a person (or a machine) so that it can be used. It is more of an Information Management Issue than an Information Technology Issue. Given the rapidly expanding amount of information that is on the Internet, finding information online is as difficult as finding a book in the Library of Congress without a catalog.

Organizing information so those requiring it can find it and utilize it has been a work in progress for centuries. With the beginning of the University movement in the 13th century librarians began to organize information in ways meaningful to a diverse group of individuals, but most of their work was directed to their local community and also suffered in the conflicts between religion, monarchies, and science. In the 18th century the value of knowledge diffusion again became important to those in power. Since then effective standards for bibliographic information have progressively been adopted and improved. Cataloging standards, abstracting and indexing elements, terminology and thesauri, records management, and archiving have been adopted. There is a difference between categorization of information and indexing of information. Information is often categorized into general groups such as travel, medical, or chemistry. These may then be broken down into subcategories (e.g. travel in the U.S., in Europe, in Africa). An example of categorization is a table of contents. It leads a reader to a chapter or chapters that may contain the desired information. Indexing is more specific. Indexing permits specific bits of information to be found. The index of a book indexes specific words or phases to the pages where they may be located. Indexing may also used controlled vocabularies to aid in the finding of information. Helicopters and rotary winged vehicles are the same thing. Controlled vocabularies allow information searching to be performed using a specific word controlled word that brings together several words with the same or similar meaning.

Work to develop similar methods and techniques for digital information are in their seminal stages.

Communities that have "grown up" with digital data rather than textual information are more advanced. The international community versed in Geographic Information Systems has developed only in the past few decades. This community gained an early and abiding interest in metadata, so that the sharing of metadata among geospatial projects and software vendors is now well standardized.

The digital data communities, while more advanced in managing digital content than the digital text and multi-media communities, still share a major challenge—information overload. Information overload is counter-productive and may lead to less effectiveness and efficiency.

Announcing. Regardless of how well organized content is, if those who may need it don't know of its existence it isn't information, it's just a potential resource. The need to provide tools for finding organized relevant information from multiple sources led to a significant sector of the information industry called secondary publishing. Organizations, both public and private, in this sector create reference tools such as bibliographic publications with citations from journals, books, monographs, conference proceedings, databases or other sources containing full text or numeric data. These organizations normally support specific communities of interest by supplying a comprehensive collection of references of interest to the target community. Similar roles are played by government agencies, such as the National Library of Medicine with its *Index Medicus* and MEDLINE database.

Accessing. While it is important to know about the existence of needed content, it is normally more important to obtain the content itself. This, perhaps, is one of the biggest problems facing users and information managers alike. For example, the Defense Technical Information Center (DTIC) has online citations to the nearly two million technical reports in its collection. However, only full text

documents brought into the collection since 1994 and those converted based on demand are in digital form. The cost to digitize the full collection is prohibitive. Thus, DTIC still annually supplies tens of thousands of printed documents to its customers. It is interesting to note that, even where documents are in electronic form, a significant demand still exists for them to be supplied as printed documents. The average size of a document in DTIC's collection is 110 pages. It takes no research to know that most people prefer NOT to read a large document online, nor do many people have the capability to download and print large documents locally.

Another consideration in discussing access is how digital documents are stored and delivered. The way that users download and import documents from the web varies depending on the browser being used and the applications on the user(s) system. For example, the Adobe Acrobat Portable Document Format (PDF) is a file type created to allow formatted documents to be widely distributed regardless of whether specific fonts or postscript files are available to the viewer's system. PDF files can embed specialized fonts and images within the document as they are distributed. This ensures the document remains exactly as formatted by its authors.

Adobe Systems created the PDF format. This company freely distributes its Adobe Acrobat Reader software to anyone who wishes to view PDF files. These files are essentially images of the documents and thus, external full text searching cannot be used, although PDF files of documents created from word processing or typesetting programs can be searched internally. There are, of course, other approaches that will allow full-text searching of a document. These, however, may be considerably more expensive to produce, can more easily be altered, and do not ensure the document remains exactly as formatted (which may or may not be important, depending on the document itself and the intent of the user).

Disseminating. OMB Circular A- 130 states that the term "dissemination" means the government initiated distribution of information to the public. Not considered dissemination within the meaning of this Circular is distribution limited to government employees or agency contractors or grantees, intra- or interagency use or sharing of government information, and responses to requests for agency records under the Freedom of Information Act (5 U.S.C. 552) or Privacy Act. As currently defined in the circular access is an "on-demand" or "pull" function while disseminating is a "push" function; normally a subscription type of service based on individual customer needs. Both, however, involve sending information to others. The circular points out that access is a passive function for federal agencies and differs from dissemination. Access is the government's responsibility, " ... when the public comes to the government and asks for information the government has and the public is entitled to..." Dissemination, however, is when, "... the government provides the public with information without the public having to come and ask for it." These definitions can apply just as well to government organizations.

The National Technical Information Service (NTIS) is one example. NTIS provides its customers documents based on individual user profiles. These documents can be in paper, microfiche or electronic form, but the most popular form is through the SRIM product, Selected Research In Microfiche. What NTIS does is not unique. Most information management organizations provide similar services. The profile-driven dssemination approach addresses the challenge of "information overload" to specific users or organizing by allowing users to tailor information services to meet their specific needs.

The ability of individuals to address some of their "information overload" through portal technology is just beginning. Based on personal preferences, portals allow individuals to tailor their own web page to establish such things as calendars, automatic access to favorite sites, and notification of updates to information sources that meet their specific needs. Portals can also be established for the organization

or enterprise as a whole. These allow organizations to combine internal business process information and appropriate content found on the Internet as a whole. They can also be used to help those both internal and external users find information located throughout the enterprise. The recently announced FirstGov portal is an example. This web site is intended, when mature, to provide a single online information portal that connects people with U.S. government information. FirstGov allows users to search all 27 million federal agency web pages at one time. The website provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the weather service during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), and key sites that access state and local government web pages.

Preserving. We advance knowledge by building upon what has gone before. Sir Isaac Newton attributed his discoveries to the work done by his predecessors, stating "If I have seen farther than others, it is because I was standing on the shoulders of giants." Indeed, on a grander scale, we call the period before recorded (and somewhat preserved) information artifacts Prehistoric. Information is critical to scientists and engineers, to historians, to decision makers, to students, in fact nearly to everyone. Accordingly, it must be preserved.

The advent of the digital world, however, is bringing new challenges. In the past much of the challenge of preservation was left to specialists such as records managers and archivists to address long-term needs and clerical personnel to handle the short-term needs of the organization and implement the records management policies of the specialists. In the digital world quite often an original document may never get into a preservation system. It may be created to serve the purpose of the author(s), stored and transmitted by a system managed by an information technologist and completely bypass the critical content preservation function. Information that may be of critical importance to others may be irretrievably lost as well as the record of its existence.

It is important to recognize, however, that preservation does not ensure access while access, on the other hand, does encompass preservation. So when we talk about archival policies and practices we should in this electronic era couch things in terms of permanent access to information. Furthermore, preservation of digital information involves unknown, and as yet unknowable, costs to migrate the information to different formats and media to prevent technological obsolescence. There is real concern that information will be lost as the equipment and software used to create and use digital information becomes obsolete. Depository librarians and others feel that in a rapidly changing electronic environment, they cannot be sure that the currently available electronic files will be able to be opened and used in the future or that there will be an easy, cost-effective means to migrate this generation of electronic products to future formats and media.

THE FEDERAL GOVERNMENT'S LEADERSHIP

The federal government's leadership in the area of public information availability and accessibility has been mixed. Let us first look at the positive side of the ledger.

The President, the Congress, individual federal agencies, and the Judiciary are all to be commended for the extraordinary leadership which they have demonstrated, especially in the last four or five years, to exploit the full advantages of the Internet and the World Wide Web, and the incredible power and capabilities underlying information and telecommunications technologies, to maximize government information availability and government services to the American people.

Virtually every week in the popular media the citizen is alerted to:

- a new electronic service to simplify and speed up doing business with the government, such as seeking grants, loans, permits, licenses, and many other benefits and entitlements, and to consolidate and integrate related services into "just-in-time," and "just-in case," systems;
- a new website, database, online clearinghouse, or other electronic government information product or service to alert citizens as to what new and existing benefits and entitlements they are eligible for, or help them seek employment, protect their family's health and welfare, ensure safety and security measures at home, in schools, and in the workplace, view weather forecast so as to know when to plant crops, and so on; and
- a new law or amendment to an existing statute that strengthens the public's ability to identify, search for, locate, retrieve, and utilize the government's vast information holdings.

But there is a considerable ways yet to go. Executive, Legislative and Judicial leadership continues to be needed in harnessing modern information and telecommunications technologies to help job seekers, senior citizens, minorities, small and medium-sized businesses, lower levels of governments, and public and private institutions such as schools and hospitals, to cope with their many challenges, including:

- helping the private citizen to meet his or her myriad personal, family, and community challenges by learning about hundreds of government assistance programs, and how to find and apply for the benefits and services they provide, but ideally by first improving their government information literacy skills using libraries and information professionals;
- assisting small and medium-sized enterprises by providing massive amounts of periodically updated scientific, statistical, technical, and other data and information to find or expand existing domestic and global markets, to diversify their product lines and increase sales volume, to apply for patents and copyrights and trademarks, and to help government itself perform its functions more efficiently through privatization where appropriate, through value-added service contributions, and through Information Age partnership arrangements;
- helping lower levels of government, especially individual communities and Native American tribes, carry out their programs and services more efficiently and effectively, and to minimize unnecessary overlap and duplication between the hundreds of programs and services administered by all levels of government—federal, state, local, and tribal;
- assisting students to finance their education, and helping schools, colleges and universities to modernize their curricula, and assist their faculties and staff by employing distant learning (remote education) and other online educational technologies in consort with traditional modes of teaching and learning;
- assisting senior citizens, the disabled, the disadvantaged, and minorities, as well as hospitals, nursing homes, community centers, and other healthcare and community social and economic institutions, to meet the medical, economic, legal, and social needs of these and other special populations;
- helping historians, archivists, librarians, journalists, researchers, genealogist, as well as the general population, find and retrieve official government records and government publications and documents, preserve them once created, index and organize them, correlate them across federal agency and discipline lines, and make them more accessible; and
- assisting legislators, governors, mayors, judges, school district officials, and other public servants to fulfill their governance duties and responsibilities more efficiently, to raise their consciousness level more effectively as to issues and concerns of which they must be aware, and to allow them to interact with their constituents more efficiently through such measures as websites, listservs, electronic bulletin boards, and e-mail messaging.

The Commission "mapped" a small sample of some key public information products by correlating nine key attributes in a single matrix-like framework so that policymakers can more readily understand, at a glance, the inter-relationships between: the statutory authority for the resource; who the beneficiary-users are; what the sources of the data or information are; the authors and the nature of value-added contributions; how the resource is dstributed or made available; how the resource is financed; and whether a charge is levied for obtaining it or not. The Federal Library and Information Center Committee (FLICC), and the Government Documents Roundtable (GODORT) of the American Library Association (ALA) each prepared several "Public Information Resources Maps".[11]

The following *selected list of landmark government legislative initiatives* illustrates how all three branches of government have moved to put in place strengthened electronic government information and information services machinery, especially in areas where the government interacts with the public:

- *A Citizens Guide on Using the Freedom of Information Act and the Privacy Act of 1974 to Request Government Records: First Report*, U.S. House of Representatives, Committee on Government Reform and Oversight, House Report 105-37, March 20, 1997;
- The Electronic Freedom of Information Act Amendments (E-FOIA), Public Law 104-231, 1996, which makes clear that government electronic material (e.g. e-mail messages) must also be considered an official agency record within the meaning of the Federal Records Act, and directing agencies to establish online reading rooms, and make agency information available in the medium of their choice;
- The Children's Online Privacy Protection Act (COPPA) of 1998, which requires federal agencies to obtain verifiable parental consent before collecting personal information from children;
- The Government Paperwork Elimination Act (GPEA), Public Law 105-277, 1998, which sets deadlines for agencies to transfer their paper-based transaction systems to electronic-based, including most transactions that take place between the government and the public, including filing tax returns, applying for benefits and other entitlements, and so on; sets 2003 as target date for completion of medium migrations;
- The Information Technology Management Reform Act (Clinger-Cohen Act), Public Law 104-106, February 10, 1996, which expands and clarifies the CIO role in planning, managing and utilizing agency information technology resources;
- Government Performance and Results Act (GPRA), Public Law 103-62, 1993, which holds agencies more directly accountable for achieving positive results by using observable and measurable performance indicators, and other means to verify and validate agency performance by comparing actual results achieved with expected and projected results;
- The Paperwork Reduction Act Amendments of 1995 and Revised OMB Circular A-130, *Management of Federal Information Resources*, which ties agency information technology and information resources more directly to agency missions; specifically addresses agency public information access and dissemination requirements in that context; strengthens the role of the Government Information Locator Service (GILS);
- The Rehabilitation Act, 29 USC S 794d, Section 508,1998, which requires that federal agency electronic and information technology be accessible to persons with disabilities, including members of the public and federal employees;

[11] The Public Information Resources Maps prepared by FLICC and GODORT are available in Appendix 28 and at http://www.nclis.gov/govt/assess/assess.html.

- Technological, Scientific, and Engineering Information Act/National Technical Information Act/American Technology Preeminence Act, Public Law 81-776 and Public Law 100-519, 1991, which directs the Secretary of Commerce to establish and maintain a clearinghouse for the collection and dissemination of scientific, technical, and engineering information;
- NARA Bulletin 2000-02 (replaces Bulletin 99-04), Dec. 27, 1999, which has ultimately led to NARA surveying agency records programs more systematically so that they are in a better position to promulgate electronic records management policies and procedures;
- GPO Electronic Information Access Enhancement Act, Public Law 103-40, 1993, which requires the Superintendent of Documents, through the government Printing Office, to provide online electronic access to the federal Register, the Congressional Record, and other appropriate publications. The GPO Access portal launched in June 1994 is established pursuant to this statute;
- Federal Depository Library Program Amendments, 1994, which links the role of the GPO Access portal with the FDLP and the responsibilities of the Superintendent of Documents with respect to electronic government information organization, cataloging, indexing, access, and dissemination;
- Executive Order 12958, *Classified National Security Information,* 1995, which directs the declassification of all classified information 25 years and older within five years of the Order's promulgation, except where otherwise explicitly exempted by statute;
- Memorandum for Chief Information Officers and Federal Webmasters: *Top Privacy Principles for Federal Websites*, issued by GSA, Federal Webmasters Forum, 1998, and which directs agencies to place high priority on protecting the public's privacy, including notifying the public whenever data is collected on the Internet;
- President's Memorandum on *Privacy and Personal Information in Personal Records*, May 14, 1998, and M-99-05, instructions on complying with the Memorandum, January 7, 1999, which directs agencies to review current information practices and ensure they are being conducted in accordance with privacy law and policy;
- Executive Order 13011, *Federal Information Technology,* 1996, which ties together the respective policies of the Information Technology Management Reform Act, the Paperwork Reduction Act, and the Government Performance and Results Act, and formalizes OMB oversight authority of information technology;
- *Memorandum on Use of Information Technology to Improve Our Society*, and *Memorandum on Electronic Government*, Presidential Memoranda for the Heads of Executive Departments and Agencies, Dec. 17, 1999, designed to strengthen public access to federal government information and services by directing agencies to put more information online that is identified and organized in a way that makes it easier for the public to find the information it seeks;
- OMB Memorandum 98-05, *Guidance on the Government Information Locator Service,* 1998, which continues agency responsibilities with respect to the creation and use of GILS records notwithstanding the expiration of OMB Bulletin 95-01, *Establishment of Government Information Locator Service*, which directed the original establishment of GILS pursuant to the Paperwork Reduction Act and OMB Circular A-130; and
- OMB survey of agency plans for e-Gov; on September 19, 2000, Sally Katzen, Deputy Director for Management of OMB sent a letter to Senators Thompson and Lieberman recapping steps Executive Branch agencies have taken to move smoothly toward the e-Gov environment contemplated by the Congress, and the Senate's Committee on Governmental Reform specifically.

There are also many websites that maintain information on public access laws, and many of these are listed in Appendix 14, which is a copy of the Commission's study web page at the time of publication of this report.

There is, however, another side of this equation. There are many areas where the absence of dynamic federal leadership in public information is causing great difficulties. They are dealt with in the following sections.

THE HIDDEN COST OF "ELECTRONWORK"

We are confronted by technocrats on all sides who point to the many benefits of the Internet and the World Wide Web, but what about the resulting burdens and the costs? Some are saying that one of the biggest burdens is "electronwork." This term is used to characterize the side effect of utilizing electronic information as the medium to interact with the government instead of utilizing ink-on-paper and other pre-electronic technologies, which were called "paperwork."

Because libraries, professional information intermediary handlers and end-users of government information are so fearful that the formats and mediums they're currently receiving (such as PDF files) are going to inevitably disappear, they are engaged in substantial printing of electronic documents to produce a backup hard copy, which makes this an even greater transference of costs from the government to the end users—the public—and much, much more expensive unit cost per copy aggregate costs than even commercial printing! As the current argot goes "Hello? Is anybody out there?" The agencies are not too worried because they don't have to pay—but the end user does pay and this is a substantial cost to the U.S. economy.

For example, consider the costs to download and print 500 or 600 page report. The user incurs telecommunications costs; an amortized utilization of his or her computer equipment, including storage capacity for the electronic file; software costs for the programs to download and to process the electronic file; printer supplies, including a ream of paper and toner or ink; and then there is the time necessary to locate the file, download it and wait for it to print. In short, contrary to the broad, and commonly asserted, myth that information on the World Wide Web is a free good, when all of the "hidden" costs are added up, it certainly is anything but free to the user.

INFORMATION COLLECTION BUDGET, BUT NO INFORMATION DISSEMINATION BUDGET

The federal government has an *information collection budget* to keep the government's programs for collecting information *from* the public from getting out of hand, but the federal government does not have an *information dissemination budget* to enhance the value of the government's programs *for sharing its knowledge treasures more effectively with the public.* Disseminating information to the public is too often considered an afterthought, a by-product of an agency's operations, not an integral line item in project plans, information resource budgets, and procurement guidelines.[12]

GOVERNMENT-WIDE PUBLIC INFORMATION SERVICES AND INFORMATION MANAGEMENT AGENCY(IES) MORE IMPORTANT THAN EVER

[12] The need for an information dissemination budget is discussed in more detail in Recommendation 4.

> The role of the central public information services agencies is to ensure easy access to all segments of the public, including the disadvantaged and other special sectors of the general population, to a wide-range of public information from many agencies on a permanent basis. However, the mission-oriented agencies are more likely to provide ready access to only those documents that further the agency's mission, and only for as long as they further the agency's mission, and only to those well-defined constituency users in whom the agency's management is most interested, and to whom the agency is most accountable.

Admittedly, now with electronic documents and the Web, agencies can perform many of the same functions themselves without significant cost and efforts, so their support for the government-wide information services provided by NTIS, the Superintendent of Documents, and others, has begun to diminish. The individual agencies believe, incorrectly, that it is less important to provide the documents to the central information service organization since the public can get it from the agency (or bureau or division) website, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.[13]

When agencies, bureaus or divisions that do not have the primary mission of information dissemination go into the information dissemination business, they do so with a different orientation and different motives than those of the central information services organizations. The role of the central public information services agencies is to ensure easy access to all segments of the public, including the disadvantaged and other special sectors of the general population, to a wide-range of public information from many agencies on a permanent basis. However, the mission-oriented agencies are more likely to provide ready access to only those documents that further the agency's mission,[14] and only for as long as they further the agency's mission, and only to those well-defined constituency users in whom the agency's management is most interested, and to whom the agency is most accountable.

Thus, the principles of public access are not achieved uniformly through all of the agency information systems, and no one knows which of the thousands of systems is missing what specific information products. There is no assurance that the government is providing full public access to what should be public information. There is also no assurance on what that information is, or where it is. Instead, proper public information dissemination depends on the judgment of thousands of unmonitored officials at all levels in thousands of lower level units of government.

> Some people seem to be saying that we can get rid of central organizations entirely and move to a fully decentralized and dispersed infrastructure of information and communications, where nobody and no institution is in control of any of it! The Commission strongly disputes this extremist view as misguided, simplistic and naive.

There is also considerable confusion regarding a certain superficial parallelism between strong central policy leadership and oversight on the one hand, the dispersed and decentralized information holdings and flows in the Internet Age on the other hand. The pressure to get rid of "big, centralized, organizational structures" on the grounds that they are inappropriate to the "highly dispersed and

[13] This issue discussed in more detail under Finding 6.A.

[14] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA), do consider access to relevant research and development part of their mission, but have traditionally focused most of the efforts on service to the agency personnel, contractors and grant recipients. Recently the Department of Energy and the Defense Technical Information Center (DTIC) have begun to offer access to the general public through their websites.

decentralized storage and handling of information in the Internet Age" must be carefully considered and applied. Some people seem to be saying that we can get rid of central organizations entirely and move to a fully decentralized and dispersed infrastructure of information and communications, where nobody and no institution is in control of any of it! The Commission strongly disputes this extremist view as misguided, simplistic and naive.

The Commission argues that, on the one side, as the pressures to disperse, fragment, and decentralize *information* flows and holdings increase, there is a corresponding need on the other side to ensure that such dispersion, fragmentation, and decentralization is planned and managed *under careful, overall policy leadership and guidance*. Otherwise, the entire infrastructure will devolve into nothing more than a vast network of disconnected and dis-connectable, non-interoperable databases and collections, systems, and networks that may be some Internet telecommunication engineer's fantasy, but will be a nightmare of no practical value. The lack of uniform government-wide web electronic publishing guidelines is a golden example of how the federal government currently risks losing control of public information dissemination unless the reforms contemplated in this report are put into place. Fortunately, the new *Guide to Federal Publishing* just published by the Interagency Council on Printing and Publications, and the Federal Publishers Committee, has arrived just in time to help the situation.

Recent NCLIS Public Information Initiatives

As mentioned above, in 1996 the National Commission on Libraries and Information Science began a series of closely related studies aimed at assessing the strengths and weaknesses of the federal government's public information dissemination machinery. These studies were preceded by a proposed Statement of Work, prepared by the National Academy of Science's Computer Science and Telecommunications Board (CSTB), in which three main stages were recommended:[15]

- research and data collection;
- analysis of results, including the documentation of findings and conclusions; and
- formulating recommendations to the President and the Congress.

Then in 1996, the first research and data collection initiative was taken in the form of a request from the Government Printing Office (GPO) to NCLIS to undertake an assessment of the proliferation of electronic government information products formats, mediums, platforms, and protocols. As mentioned, NCLIS awarded a contract to Westat, Inc. The details of the study are contained in the full report, which is available from the GPO website.[16]

Eight policy and planning issue findings of that study are directly relevant to this study:

1. There is an overall lack of government information policy guiding electronic publishing, dissemination, permanent public access, and information life cycle management, especially as information policy relates to agency missions. Also, there is a lack of overall coordination of these initiatives at the governmental, branch, or even agency level.

[15] The details of the Computer Science and Telecommunications Board proposal to the Commission are contained in documents at www.nclis.gov/info/gpo1.html.

[16] *Report on the Assessment of Electronic Government Information Products*, prepared by Westat, Inc. under a contract issued by the National Commission on Libraries and Information Science and commissioned by the Government Printing Office, March 1999; http://www.access.gpo.gov/su_docs/nclisassessment/report.html.

2. Responsibility for electronic publishing within agencies is decentralized, diffuse, and unclear. Some agencies either could not identify or had difficulty identifying the proper respondent with their own agency, or even the person who was responsible for the product.
3. Some government agencies are monitoring the information needs of their users to enhance current access to electronic government information products.
4. There is a lack of specific planning for product development and technological migration, including dealing with the problem of safeguarding the preservation of government information in the face of hardware and software obsolescence.
5. There is a lack of planning for or consideration of web design approaches that comply with the American with Disabilities Act (ADA).
6. The concept of "Permanent Public Access"[17] is not well understood, in no small measure because it is not statutorily based. Respondents also had difficulty distinguishing between this concept as it applies to electronic products on the one hand, and archiving electronic federal records pursuant to National Archives and Records Administration (NARA) regulations on the other hand.
7. Metadata and their importance to public access are not well understood, particularly as they may affect PPA. Only 27% of respondents reported having a metadata record (such as the Government Information Locator Service or GILS record) for the products surveyed.
8. There is a lack of understanding of what ensuring authenticity entails, and a lack of planning for or consideration of ensuring authenticity of electronic government information products.

Then August 1999, in reaction to the proposed closure of the National Technical Information Service (NTIS) and the transfer of its functions, information holdings, and other resources to the Library of Congress, the Commission launched yet another study to recommend, at least in a preliminary fashion because of the time urgency involved, alternatives open to the President and the Congress to deal with "the NTIS matter."

In her March 16, 2000 letter to the President and the Congress, NCLIS Chairperson Martha Gould offered four key recommendations:[18]

1. NTIS be retained in the Department of Commerce, at least temporarily for the balance of FY 2000 and extending into FY 2001, in order to give the Commission, assisted by a broad group of both public and private sector stakeholders, enough time to study thoroughly the pros and cons, and costs and benefits, of a small number of feasible alternatives, including (but not limited to) the one formally announced by Secretary Daley last August (i.e. transfer NTIS collections to the Library of Congress);
2. The Department of Commerce be allowed to utilize the $4.5 million included in its Supplemental FY 2000 budget request (the NTIS Revolving Fund account) to keep NTIS operational for the remainder of FY 2000 at a satisfactory level of staffing and service, instead of using those funds to further downsize and close the agency;

[17] The Commission has begun to use the phrase "Permanent Public Availability" in lieu of "Permanent Public Access" because it more accurately reflects the fact that information may become available to the public through proactive dissemination or passive access. This issue is discussed more fully in the section entitled What This Report Is About and What It Is Not About. It is also addressed in Findings 1.A and 5.K.

[18] This is in the transmittal letter included in U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress*, Washington, DC: U.S. Government Printing Office, March 16, 2000; http://www.nclis.gov/govt/ntis/presiden.pdf.

3. The Congress should authorize an appropriation of $5 million[19] (the estimated funding level required for a full fiscal year) for FY 2001 to sustain NTIS operations at a necessary satisfactory level of service, and allow the Commission to complete its in-depth analysis; and
4. Ensure that the final decision on how to best deal with the NTIS situation is not made exclusively on the narrower, fiscally-driven ground of preventing NTIS from falling into a deficit because of the 1992 Public Law 102-245 Section 3704(b)-1 requirement that operating costs should be recovered primarily through the collection of fees. As important as that consideration is, the government must also take into account the larger question of how, in the Internet Age, we can strengthen government information dissemination machinery to the public, to private industry to enhance U.S. competitiveness, and to the U.S. scientific research communities. Inter-related concerns of permanent public availability of, and accessibility to, permanent records retention, preservation of materials, and authentication of official government holdings, must also be addressed. The government must also consider the magnitude and consequences of shifting costs from end-users to federal agencies and therefore the taxpayer) as public access to federal websites accelerates.

Within weeks of the Commission's publishing its report on NTIS in March 2000, Commission Chairperson Gould received a letter from Chairman John McCain of the Senate Committee on Commerce, Science, and Transportation, asking NCLIS "to undertake a review of the reforms necessary for the federal government's information dissemination practices." The letter goes on to say:

> At a minimum, this review should include assessments of the need for:
>
> 1. proposing new or revised laws, rules, regulations, missions, and policies;
> 2. modernizing organizational structures and functions so as to reflect greater emphasis on electronic information planning, management, and control capabilities, and the need to consolidate, streamline, and simplify missions and functions to avoid or minimize unnecessary overlap and duplication;
> 3. revoking (the) NTIS self-sufficiency requirement; and
> 4. strengthening other key components of overall federal information dissemination infrastructure.
>
> You are also requested to provide specific recommendations on the future of NTIS. It is hopeful that these recommendations would be consistent with any overall federal information dissemination recommendations that you would also provide.[20]

On July 17, 200, Chairperson Gould received a letter from Senator Joseph I. Lieberman of the Senate Committee on Governmental Affairs,[21] indicating that he was "writing to join in Senator McCain's June 12 request for a review of reforms to improve the federal government's information dissemination practices." He stated:

> The results of that study will prove invaluable to my work as Ranking Democrat of the Governmental Affairs Committee, which has jurisdiction over most of our federal government's information dissemination practices. The study will also help inform my

[19] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.
[20] Senator McCain's letter is available in Appendix 1 and at http://www.nclis.gov/govt/assess/mccain.html.
[21] Senator Lieberman's letter is available in Appendix 3 and at http://www.nclis.gov/govt/assess/liebermn.html.

> efforts to promote e-government, which includes making federal information more available over the Internet.

Senator Lieberman then suggested:

> I would suggest two additions to the Commission's study. Senator McCain's letter of June 12 asked that the Commission include assessments of the need for proposing new or revised laws or regulations. I would ask the Commission to include in that review any relevant sections of the Paperwork Reduction Act that may need revision, because the Committee will be considering the law's reauthorization next Congress. Second, when the Commission considers the future of the National Technical Information Service, I would ask that it consider the viability of maintaining NTIS as a centralized fully electronic repository of federal scientific and technical information, accessible via the Internet and equipped with search and retrieval capabilities.

From March through June 2000, when the Commission was planning and organizing for this study effort, contact was also made with key House committee staff liaison officials with whom the Commission had already dealt extensively in the context of its two earlier studies, to ensure that the House was not in disagreement with the Senate's request. The Commission was advised that there were no objections to proceeding along the lines suggested by the two senators.

WHAT THIS REPORT IS ABOUT, AND WHAT IT IS NOT ABOUT

It is always important to carefully delineate the boundaries of complex deliberations of this kind. The requirement to specify one's scope with as much precision as possible is especially important when it comes to the area of disseminating government information to the public, because the area is so very broad and complex. There are hundreds of laws involved, thousands of federal programs with some requirement for disseminating or providing access to the public for government information, and tens of thousands of policy statements at all levels of government.

This report is about recommending reforms to the basic machinery government employs to ensure the public has efficient access to, and is regularly advised of its workings. In short, it is about the general and fundamental laws, policies, programs, and practices by which government information is made available and accessible to the public, including both "passive" access mechanisms, and "proactive" dissemination mechanisms.[22] The Commission defines these terms are as follows:

- Proactive dissemination occurs when an agency decides that making information available to the public is an essential part of its mission, and moves to create policies and programs that carry out this aspect of their mission. The information (except that with any legal restrictions) is made available in whatever form and medium the agency wishes to use, through channels that the agency believes will deliver it most efficiently and effectively to the end users most in need of it, or those who simply wish to have it. In many instances, the agency will announce the availability of the information through press releases or in other ways advertise the existence of such information. Those agencies who proactively make their information available are probably also the most likely to ensure that it is permanently available.
- Passive availability occurs when an agency, in compliance with laws, regulations, or directives, places its information with an intermediary disseminator or directly makes the information available to those who request it. No effort is made to aggressively reach end users and make them

[22] This issue is also discussed in Findings 1.A and 5.K.

aware of the existence and availability of the information. However, no attempt is made to restrict the information, and when a user finds out about the information and requests it, the agency or its intermediary will make it available to the requester. These agencies are not as likely to be concerned with making this information permanently available.

While the Commission's investigations inevitably touched upon various "specialized areas," still, the Commission tried to keep its eye on the main target and not wander too far a field into those specialized areas, except in the few instances where addressing one of them was completely unavoidable, such as Section 508 of the Rehabilitation Act pertaining to access to government information by disadvantaged individuals, and in the study of scientific and technical information (STI) because of the direct focus of the NTIS study (including an economic analysis).

By "specialized areas" we mean, for example:

1. computer and telecommunications security matters;
2. intellectual copyright issues, including patents, trademarks, and trade secrets;
3. privacy concerns;
4. information interchange with foreign governments, including technology transfer;
5. confidentiality issues related to the government's custodial role of third party information holdings;
6. technical standards questions such as encryption and electronic signatures;
7. observing and measuring information productivity, and the treatment of information as an economic good or commodity;
8. technical questions relating to the interoperability and interconnectivity of systems and networks;
9. replacing actual data with simulated data in federal statistical data files;
10. linguistic, socio-cultural, and related barriers;
11. information ethics questions;
12. electronic financial and business information interchange such as electronic funds transfer (EFT);
13. an historical review of prior public information dissemination reform initiatives; and
14. detailed economic analyses of benefits and costs related to government information.

Of course, all of these areas are undeniably important, and it could be argued that they are, in a larger sense, inseparable from and linked to each other, as well as to the "general" issues of reforming public information dissemination. However, the Commission resisted being drawn into addressing them in depth, and in so doing risk losing sight of the broader aims of the study.

C. METHODOLOGY

NCLIS determined that the best approach to satisfying the requests from Senator McCain and Senator Lieberman would be to maximize the utilization of both public sector and private sector knowledge by asking for volunteer assistance.

FOURTEEN MAJOR COMPONENTS OF THE STUDY

The approach agreed upon would have fourteen major components:

1. Establish four study panels and ask each to address one of four overarching aspects of the overall study;[23]
2. Create a Group of Experts composed of distinguished public figures with special expertise and experience in an area of strategic importance to the study, such as information law, information economics, information science and technology, librarianship, public policy, and private sector contributions to value-added dissemination of government information;[24]
3. Survey a cross-section of federal agencies to establish a "baseline" of agency policies and programs relating to the dissemination of government information;[25]
4. Informally survey a cross-section of disadvantaged and special population associations which depend heavily on government information to service the needs of their constituents (e.g. to meet the requirements of Section 508 of the Rehabilitation Act);[26]
5. Update a compilation of all federal laws containing requirements directing agencies to establish some kind of information resource to respond to public information needs, first undertaken in 1996 by the Congressional Research Service;[27]
6. "Map" selected federal laws and policies containing public information resources requirements so as to illuminate the richness and diversity of those resources and help pinpoint where they might be strengthened;[28]
7. Ask the School of Information Sciences at the University of Pittsburgh to update its National Information Policies Bibliography database;[29]
8. Revisit the NCLIS 1982 Public-Private Sector Task Force Report, update it, and republish it for study participants as well as for broader government and public use;[30]
9. Communicate and meet with representatives of key federal major public information resources entities, including key Congressional Committee representatives in both the Senate and the House, representatives from the Administrative Office of the U.S. Courts and other elements of the Judiciary, and, in the Executive Branch, Access America and National Partnership for Reinventing Government (NPRG), FirstGov developers, the CIO Council, the Library of Congress, the National Technical Information Service, the Government Printing Office including the Federal Depository Library Program, the National Information Infrastructure Advisory Council, and various interagency committees (ICs) such as the IC for Statistical Policy, the IC for Printing and Publishing, the Federal Webmasters' Forum, and so on;
10. Communicate and meet with public interest groups, especially those that deal heavily with government information, such as the Association of Public Data Users (APDU) and Americans Communicating Electronically (ACE);
11. Communicate and meet with library and information professional associations, including the American Library Association (ALA), the Special Libraries Association (SLA), the Association of Research Libraries (ARL), the Association of College Research Libraries (ACRL), the Chief

[23] The panel participants are identified in Appendix 16 and at http://www.nclis.gov/govt/assess/panelmem.html.
[24] The experts are identified in Appendix 16 and at http://www.nclis.gov/govt/assess/panelmem.html.
[25] The survey results are summarized in Appendix 26 and at http://www.nclis.gov/govt/assess/nclismsg.html.
[26] The survey results are summarized in Appendix 27 and at http://www.nclis.gov/govt/assess/special.html.
[27] Appendix 13 discusses categories of public information laws and representative provisions of such laws; it is also available at http://www.nclis.gov/govt/assess/statcat.html. Appendix 32 is a compilation of Federal statutes pertaining to public information dissemination passed during the 105, 106th and 107th Congresses.
[28] The resulting Public Information Resources Maps are available in Appendix 28 and on the Commission website at http://www.nclis.gov/govt/assess/assess.html.
[29] The bibliography is available in Appendix 31 and at http://www.nclis.gov/govt/assess/biblio.html.
[30] Appendix 23 is a retrospective appraisal of the 1982 report by the chairman of the NCLIS Public Sector/Private Sector Task Force; the complete 2000 edition is available at http://www.nclis.gov/govt/assess/publpriv.html.

Operating Officers of State Library Agencies (COSLA), the Urban Libraries Council (ULC), the American Association of Law Libraries (AALL), the Government Documents Roundtable (GODORT) of the ALA, the Public Library Association (PLA), and others;

12. Research past and current studies touching about reforms of the government's public information dissemination laws, policies, programs, and practices, and determine where their findings, conclusions, and recommendations intersected with the current study's goals and objectives, paying special attention to the Congressionally-mandated studies running more or less concurrently with the extant NCLIS study, (1) of the merits of transferring the Superintendent of Documents programs in GPO to the Library of Congress, and (2) an intensive study of the NTIS missions, functions, and financing by the General Accounting Office;
13. The solicitation of "white papers" (issue papers) on selected major issues and concerns relevant to the study, including the myths that surround the Internet and the World Wide Web, the reinvigoration of the Information Life Cycle Management concept, and the feasibility of establishing a new Public Information Resources Administration;[31] and
14. Updating and broadening the bibliography prepared by the second stage study the Commission completed in March 2000, addressing alternatives for dealing with the proposed closure of NTIS.[32]

ASSESSMENT MILESTONES AND SCHEDULE

Here is a chronology of study milestones:

Period	Milestone
March 2000	Report *Preliminary Assessment of the Proposed Closure of NTIS* issued to the President and the Congress by NCLIS
June/July 2000	Congressional request for assessment; communications with Congress, the Executive Branch, the Judiciary, and stakeholder groups participating about the assessment
Early August 2000	Establishment of four panels and identification of group of experts, solicitation of citations to key background research
Late August through October 2000	Panels deliberate; NCLIS concurrent research activities undertaken
October 15, 2000	Panel Final Reports received and disseminated for Group of Experts and public review and comment
November 1, 2000	NCLIS begins drafting final "integrated" (consolidated) report
November 15, 2000	Full Commission meets to hear panel reports; review Experts' comments; review public comments; and consider Commission's first draft of Executive Summary & proposed legislation
November 16, 2000	Draft Executive Summary, draft excerpted sections from proposed legislation, fact sheet on Federal Depository Library Program, and fact sheet on parallel branch of government recommendations, all posted to NCLIS website
November 27, 2000	First draft of full, complete NCLIS final report, including proposed new legislation, posted on the NCLIS website for public review and comment

[31] Several White Papers were submitted and are available in Appendices 23, 24, and 25 and at http://www.nclis.gov/govt/assess/hayes.html, http://www.nclis.gov/govt/assess/worldlib.html, and http://www.nclis.gov/govt/assess/price.html.
[32] The bibliography is available in Appendix 31 and at http://www.nclis.gov/govt/assess/biblio.html.

December 4, 2000	NCLIS Public Meeting, Dirksen Senate Office Building, hosted by Senate Committee on Governmental Affairs
December 11, 2000	Second draft of final report posted for public review and comment
December 15, 2000	Preprints of Final Report transmitted to the President and the Congress; electronic file posted on Commission website
January 2001	Printed copies available for distribution to Congress, the Administration and key stakeholders

STUDY PANEL DELIBERATIONS

To help the Commission in its investigations, four advisory study panels and one group of experts were established.[33] The four panels were:

1. Panel 1 (**NTIS Business Model**)—Reforming the NTIS business model for the Internet Age;
2. Panel 2 (**Internal Government Reforms**)—The extent to which internal (i.e. individual government agency needs) for NTIS, GPO, NARA, national library, & other central service bureau types of information products and services are not being adequately satisfied because of deficient, outmoded, obsolete or unresponsive laws, programs, policies, or practices;
3. Panel 3 (**External User Needs**)—The extent to which external (i.e. non-governmental) user needs for NTIS, GPO, NARA, national library, & other central government information products and services, as well as individual federal agency public information products and services are not being adequately satisfied because of deficient, outmoded, obsolete, or unresponsive laws, programs, policies, or practices; user needs include: private corporations; institutions such as universities, research organizations and hospitals; library and other intermediary distributors of government information (including public, state, academic, research, depository and special libraries); public interest groups; and individual citizen needs; and
4. Panel 4 **(Public Sector-Private Sector Partnerships**)—Redefining and strengthening public-private sector roles, partnerships, and initiatives vis-à-vis public access to, and dissemination of government information, given the advent of the World Wide Web, the Internet, and associated technological changes that are driving the Information Age.

Four distinguished professional information experts with extensive public and private sector expertise and experience were asked to serve as chairs of the panels, and accepted the invitations. The panel chairs are:

- **Peter Urbach** who chaired the Panel One effort dealing with recommending reforms of the NTIS business model; now retired, his many-faceted contributions to the library and information profession in both the public and private sectors included a term as director of the National Technical Information Service and a senior executive with Reed-Elsevier, a major commercial scientific and legal publisher;
- **Kurt Molholm**, who chaired Panel Two addressing steps to strengthen federal agency sharing of information to both help achieve their own missions more effectively as well as, in turn, help their agencies serve their own constituencies and clienteles more effectively; he currently serves as director of the Defense Technical Information Center (DTIC) and chairman of CENDI, a consortium of scientific and technical information intensive agencies;
- **Miriam Drake**, who chaired Panel Three reviewing actions to improve how the government disseminates its information to external groups, including private citizens, corporations,

[33] Panel members are identified in Appendix 16 and at http://www.nclis.gov/govt/assess/panelmem.html.

depository libraries, lower levels of government, academia, research institutions, and other sectors; she has provided a lifetime of leadership in the library and information communities including the presidency of the Special Libraries Association (SLA), as well as many key private sector assignments, and is currently dean of libraries for the Georgia Institute of Technology; and

- **Wayne Kelley**, who chaired Panel Four, reviewing how the public and private sectors could continue their traditional role of helping the Nation disseminate government information efficiently, and in diverse formats and mediums, and to very diverse audiences with special needs by working together; now retired, he has held key positions in both the public and private sectors, including a tour as the Superintendent of Documents in the Government Printing Office and as the publisher of *Congressional Quarterly*.

Specifically, the study panels were asked to analyze the key issues and concerns falling within the scope of their respective panels (i.e., perhaps an outdated law, a poorly written or interpreted rule, an obsolete regulation, the need for a new policy, a poorly operating program, deficient agency practice, or some combination thereof) in terms of:

- What is "wrong," deficient, not working as expected, or is out-of-date; and, if so, exactly how and why; conversely, are there "success stories," wherein something innovative is working especially well, and might be more widely followed;
- What needs to be done to remedy the deficiency (i.e. the reform(s) needed); did the panel make certain assumptions in order to arrive at a recommended (preferred) course of action, and, if so, what are those assumptions;
- What barriers and constraints exist, if any, to fully and effectively implementing the recommended reforms; and, conversely, what enabling actions (e.g. new legislation, parlaying the "success stories" of agency initiatives that are especially creative, innovative and effective) can be taken to create more positive conditions for strengthening the dissemination of government information to the public; and
- Should the reforms be subdivided, timeframe-wise, into short, medium, and long-term reforms, and, if so, how and what are those timeframes?

Appendix 10 identifies some of the important issues and concerns the four panels were asked to address, including:

- Try to assess the likely technological state-of-the-art capabilities in the short (current to two years), mid (2-5 years) and long term (beyond five years) timeframes that will impact the ability of the government to improve its public information dissemination programs and practices, including hardware, software, networks, and information interchange protocols; in this regard the Group of Experts should be able to provide useful advice; and
- Prepare and submit a draft final panel report to NCLIS with findings, conclusions, and recommendations; ideally (but not mandatory) include the text, or at least an abstract, or "key points" for any proposed new or amended legislation, executive orders, rules or regulations, other kinds of policy statements (e.g. OMB circulars or bulletins, executive orders), or other requirements.[34]

As mentioned above, the panels were asked not just to look at the "negative side of the equation," that is, the deficiencies in current laws, policies, programs, and practices dealing with public information

[34] The four panel reports are available in Appendices 17, 18, 19, and 20 and available at http://www.nclis.gov/govt/assess/panel1.html, http://www.nclis.gov/govt/assess/panel2.html, http://www.nclis.gov/govt/assess/panel3.html, and http://www.nclis.gov/govt/assess/panel4.html, respectively.

dissemination. They were also asked to look at the "positive side of the equation." That is, try to identify "success stories" where a law, program, policy, or practice is working particularly well, is innovative, perhaps is because it is interactive, perhaps because it is multimedia, or has a "multiplier impact," and therefore, for these and/or other reasons, could be more broadly emulated. Reviewing what is working well applies to both the public and private sectors, and especially where private sector practices might be adopted and adapted to the government's programs.

Moreover, the findings and results of the deliberations of each of the four panels were then "cross-fertilized, laterally and horizontally" and shared with each other as well as made available for public review and comment so that as wide a set of viewpoints as is feasible was solicited. In short, NCLIS did not want the four panels to operate purely in a "stovepipe, vacuum fashion." NCLIS found in its earlier study dealing with the NTIS closure that broad public participation, and the resultant wide stakeholder "back and forth" interaction, fostered a valuable climate for ferreting out both hidden facts and enlightened opinions.

STAKEHOLDER GROUP PARTICIPATION

All stakeholder groups were encouraged to seek participation in the work of all four of the panels, whether they represented public or private sector organizations or institutions. For example, there was no intention that the participation of library professionals be limited just to panel three dealing with external group needs for government information, or the participation of government agency representatives be limited just to panel two dealing with interagency sharing of government information, or the participation of private sector individuals be limited just to panels one or four. The Commissioned tried to foster a climate to maximize the opportunities for stakeholder representation and participation in both its panel work as well as in its various research activities.

THE GROUP OF EXPERTS

The group of experts was composed of recognized, knowledgeable individuals in the fields of information and communications technologies, economics, legal matters, and perhaps other specialized technical fields, including especially the World Wide Web and the Internet, state-of-the-art online approaches, alternative ways of measuring and valuing both the benefits and costs of creating, adding value to, packaging, and making available and distributing government information resources to the public, and so forth. The group also assisted NCLIS in identifying myths and predicting major future changes and paradigm shifts they perceive on the horizon.

NCLIS forwarded a copy each of the four study panel reports to the group of experts for their review and comment and made available the White Papers and other material received during the course of the assessment. They were also asked to review the draft final report.

The group of experts includes:

- **Christopher Burns**, President, Christopher Burns Inc.;
- **Edward A. Fox**, Director, Networked Digital Library of Theses and Dissertations (NDLTD) and Professor, Department of Computer Science, Virginia Institute of Technology;
- **Robert S. Hayes**, Professor Emeritus, Graduate School of Education and Information Studies, UCLA;
- **Don Langenberg**, Chancellor, University System of Maryland;

- **M. Stuart Lynn**, Retired, and formerly Associate Vice President, Information Resources & Communications, Office of the President, University of California;
- **Deanna Marcum**, President, Council on Library and Information Resources (CLIR);
- **Raymond T. Nimmer**, Leonard Childs Professor of Law, University of Houston Law Center;
- **Henry H. Perritt, Jr.**, Dean, Vice President and Professor of Law, Chicago-Kent College of Law, Chicago;
- **Ron Plesser**, Piper Marbury Rudnick & Wolfe LLP;
- **William H. Price**, Retired, and Former Director, Foreign Affairs Information Center, Department of State;
- **Carol A. Risher**, Senior Vice President, Business Development, Savantech, Inc.;
- **Thomas Susman**, Ropes & Gray, and Consultant, American Library Association;
- **Paul Uhlir**, National Academy of Sciences; and
- **Paul Zurkowski**, Newspaper Editor, and former President, Information Industry Association.

OTHER RESEARCH ELEMENTS OF THE STUDY

There were several other key elements of the NCLIS study undertaken that were "over and above" the work of the four study panels and the Group of Experts. For example, the NCLIS Public-Private Sector Task Force report published in 1982 was republished with a new preface explaining why the findings, conclusions, and recommendations in the original report are still quite relevant nearly twenty years later, despite very significant interim technological developments. Also, some material from key landmark studies of public information reforms, such as the "Informing the Nation" report prepared by the Congressional Research Service in 1994, were included in the republished report. Former NCLIS Chairperson Charles Benton, former NCLIS Executive Director Dean Toni Carbo, and former NCLIS Task Force Chairperson Robert Hayes all were consulted in the republication.[35]

Additionally, the following research activities were undertaken:

- An update of the Congressional Research Service (CRS) review "Compilation of Statutes Authorizing Dissemination of Government Information to the Public" dated March 29, 1996, co-authored by Jane Bortnick Griffith, Harold C. Relyea and Frances A. Bufalo;[36]
- An update of the "National Information Policies Bibliography" published in 1996 by Dean Toni Carbo of the School of Information Sciences of the University of Pittsburgh, including the newly-acquired document collection from former Congressional Research Service (CRS) senior information policy specialist Robert Chartrand;[37]
- An informal survey of a small number of selected federal agency public information dissemination programs and practices, including agency websites, classified by agency type such as cabinet department, regulatory, etc., by subject matter coverage, by special interests targeted, and so forth;[38]

[35] The White Paper by Robert Hayes is available in Appendix 23 and at http://www.nclis.gov/govt/assess/hayes.html.
[36] Appendix 32 is a compilation of Federal statutes pertaining to public information dissemination passed during the 105, 106th and 107th Congresses.
[37] The revised bibliography is available in Appendix 31 and at http://www.nclis.gov/govt/assess/biblio.html.
[38] The survey results are available in Appendix 26 and at http://www.nclis.gov/govt/assess/nclismsg.html.

- An informal survey of selected associations with memberships composed of disadvantaged and special populations with heavy needs for government information, including a review of the Section 508 of the Rehabilitation requirements;[39]
- A review of the earlier Westat study, commissioned by the Government Printing Office, completed in 1999, which addressed the rapid proliferation of electronic formats and mediums to which ink-on-paper and other pre-electronic government information products were being migrated to electronic modes, to ensure NCLIS would be fully aware of the state-of-the-art federal IT situation;[40]
- A reassessment of the Phase I study undertaken by the National Academy of Sciences, Computer Sciences and Technology Board for NCLIS, to ensure the original work plan suggestions made by that body were still appropriate, timely, and valid;[41]
- Acceptance of opportunities to solicit materials from, brief, and meet with representatives of various key federal players with major public information dissemination authorities and responsibilities, including the National Information Infrastructure Advisory Council, Access America and the National Partnership for Reinventing Government (NPRG), the FirstGov.gov portal initiatives including the Council for Excellence in Government, the Government Printing Office (GPO) including the Federal Depository Library Program and Superintendent of Documents Sales Program and GPO Access portal, Library of Congress and the Thomas portal as well as other Library of Congress programs such as the National Library for the Blind and Physically Handicapped, the National Technical Information Service (NTIS) and the FedWorld portal, various interagency groups such as the Interagency Committee on Statistical Policy (ICSP) and the Interagency Committee on Printing and Publishing (ICPPS);
- Acceptance of opportunities to solicit materials from, brief, and meet with representatives from public information user groups such as Americans Communicating Electronically (ACE) and the Association of Public Data Users (APDU);
- Acceptance of opportunities to solicit materials from, brief, and meet with professional library associations including the American Library Association (ALA), Special Libraries Association (SLA), Association for Research Libraries (ARL), Association for College Research Libraries (ACRL), Public Library Association (PLA), American Association of Law Libraries (AALL), Medical Library Association (MLA), Urban Libraries Council (ULC) and the Chief Operating Officers of State Library Agencies (COSLA), and others;
- Meetings with representatives of the CIO Council and some of its committees, especially those with responsibilities touching upon public information creation, handling, storage, retrieval, dissemination, archiving, and so forth, including "overseeing" the FirstGov.gov and e-Gov initiatives;
- Preparation of a comprehensive study bibliography which would incorporate base materials already inventoried in connection with the Commission's earlier materials;[42]
- Preparation of a "Public Information Resources Map" which could serve as template and a tool to dramatize and illustrate the richness and diversity of the federal government's public information

[39] The survey results are available in Appendix 27 and at http://www.nclis.gov/govt/assess/special.html.
[40] Westat, Inc., *Report on the Assessment of Electronic Government Information Products*, Prepared for the U.S. National Commission on Libraries and Information Science; commissioned by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC: U.S. Government Printing Office, 1999; http://www.nclis.gov/govt/gpo1.html.
[41] Blumenthal, Marjory S., and Alan S. Inouye. *Assessment of Formats and Standards For The Creation, Dissemination, and Permanent Accessibility of Electronic Government Information Products: Phase I,* Report to the U.S. National Commission on Libraries and Information Science from the Computer Science and Telecommunications Board, National Research Council, National Academy of Science, Washington, DC: 16 July 1997; http://www.nclis.gov/govt/gpo1.html.
[42] The bibliography is available in Appendix 30 and at http://www.nclis.gov/govt/assess/biblio.html.

resources in terms of attributes such as entitlement, regulatory or other topical area, the targeted entitlement or regulated groups and beneficiaries, how the resource is financed (e.g. appropriations, revolving funds, user fees), whether fees are charged for a government information product or service, or whether it is free to the public, and so forth;[43] and

- Preparation of various White Papers (issue papers) on selected topics, including a paper on "Major Paradigms: Myths, Realities, and Debunking the Myths," another on "The World Wide Library," another on "Information Life Cycle Management," and others.[44]

FINAL REPORT TO THE CONGRESS AND THE PRESIDENT

NCLIS received inputs for its final report throughout the course of the study from:

1. The four study panels;
2. The group of experts;
3. Review of the various research activities, including literature reviews, the database of current information laws, and so on;
4. A survey of federal agency public information dissemination policies, programs and practices;
5. A survey of the government information needs of special and disadvantaged populations;
6. Meetings with representatives from the CIO Council and its sub-committees, and other key interagency groups including the Federal Publishers Committee, the Interagency Committee on Publishing and Printing, the Federal Library and Information Center Committee, the Federal Webmasters Forum, the Interagency Committee on Statistical Policy, CENDI, the Federal Depository Library Council, and others;
7. Meetings with library and information professional associations, including American Library Association (ALA), American Association of Law Libraries (AALL), Special Libraries Association (SAL), Chief Operating Officers of State Library Agencies (COSLA), American Society for Information Science and Technology (ASIST), Association of Research Libraries (ARL), Association of College and Research Libraries (ACRL), Urban Libraries Council (ULC), Public Library Association (PLA), and others, and with other societies concerned with utilizing government information, including scientific and technical societies;
8. State, local, and tribal government officials, including library and information professional associations with memberships at those levels of government;
9. Private sector groups including trade and industry associations, labor unions, and others, including the National Federation of Federal Employees (NFFE), the Software and Information Industry Association (SIIA), the Computer and Communications Industry Association (CCIA), and the American Association of Publishers (AAP);
10. Public information user groups, including Americans Communicating Electronically (ACE) and the Association of Public Data Users (APDU);
11. Public responses to NCLIS website postings, and other relevant websites including, notably, the new e-Gov website launched by the Senate Governmental Affairs committee;
12. Scanning various listservs and checking bulletin boards that were tracking the issues and concerns addressed by the study; and

[43] The Public Information Resources Maps are available in Appendix 28 and at http://www.nclis.gov/govt/assess/assess.html.
[44] NCLIS staff/consultant White Papers are available in Appendices 11 and 12; White Papers submitted by members of the NCLIS group of experts are available in Appendices 23, 24, and 25. All of these White Papers are available from http://www.nclis.gov/govt/assess/assess.html.

13. Other sources, such as unsolicited communications.

The Congressional committees requesting the study admonished the Commission that the final report *should represent an NCLIS position*, developed as a result of its statutory mandates, findings from earlier studies, and independently gathered facts and opinions. NCLIS was specifically directed in its discussions with Congressional staff *neither to attempt to necessarily seek a consensus on every recommendation, nor to "pull punches" simply because a recommendation might appear to be politically difficult.*

Because several of the recommendations, and the subject matter itself, affect the Judicial Branch, the report is also being transmitted to senior officers in that Branch, including the Clerk of the Supreme Court, the Judicial Conference, and the Administrative Office of the U.S. Courts.

USING THE NCLIS WEBSITE AND STUDY WEB PAGES AS AN INTERACTIVE TOOL

The vehicle of the NCLIS website was once again used as a primary communications and coordination vehicle for securing involvement and participation, and obtaining public review and comment at key stages as the study proceeds and dissemination deliverables as they were produced in draft. This same approach was followed in the two earlier Commission studies.[45]

The Commission endeavored to follow a 'government-in-the-sunshine' policy by maximizing the opportunities to solicit broad public review and comment at each step in the study.

D. FINDINGS

ORGANIZATION OF THE FINDINGS

We have subdivided study findings into eight categories, based on the *sector* or *group* to which a finding is *primarily targeted;* of course to a certain extent overlap between categories is inevitable.

1. Individual Citizens (the General Public)
2. Disadvantaged and Special Populations
3. Academic, Research, and Related Institutions
4. The Federal Government—Government-Wide Policy Leadership and Oversight
5. The Federal Government—Individual Agencies With Operating Missions
6. The Federal Government—Agencies With Government-wide Information Services and Information Management Missions (Except NTIS)
7. The Federal Government—The National Technical Information Service
8. The Federal Government—Interagency Groups (e.g. CIO Council, Federal Webmasters Forum, CENDI)
9. State, Local, and Tribal Levels of Government
10. Commercial (For-Profit) Enterprises
11. Not-For-Profit Sector, Including Professional Associations
12. All Other Groups

[45] A copy of the Commission's study web page at the time of publication of this report is included as Appendix 14.

Public Information Dissemination Machinery—Functional Categories

Within each of the above twelve major categories, individual findings may require new or amended laws, rules, regulations, and so forth. We call these *functional* categories, of which there are nine principal ones:

- Laws
- Rules
- Regulations
- Policies
- Presidential Directives (e.g. Executive Orders, Presidential Memoranda)
- Standards and Guidelines
- Programs
- Projects
- Practices

Timeframes For Addressing Recommendations

The reforms addressed in this report are far-reaching. Their implementation timeframe, much less the timeframe in which the ultimate outcomes would be realized, extend from the immediate, in some cases, to ten or more years on the horizon in other cases. The distinction between whether the recommendation should be implemented immediately, or should be deferred until some time in the future, is very important. Where appropriate, the Commission has therefore tried to indicate which of the three timeframe periods is most appropriate:

1. **The Short-Term Horizon**, from the present up to two years hence;
2. **The Medium-Term Horizon**, from 2-5 years; and
3. **The Long-Term Horizon**, from five years and longer.

Conclusions and Recommendations

The Conclusions and Recommendations sections, which follow the Findings section, are structured somewhat differently than are the Findings section. For example, the Conclusions section is structured into twelve major categories like the Findings section, *but individual findings are consolidated so that only one summary conclusion statement appears under each of the twelve major categories*. Then, in the Recommendations section, two classes of recommendations are recognized: Strategic Recommendations, and Other Recommendations. However, the Recommendations are numbered consecutively in a single sequence across both categories.

For convenience, all findings, conclusions, and recommendations relating to the need for new or amended laws (such as the Paperwork Reduction Act 2001 reauthorization) are brought together in one place in Appendix 22.

1. FINDINGS RELATING TO INDIVIDUAL CITIZENS (THE GENERAL PUBLIC)

After considering all of the facts and opinions offered and collected, the Commission finds that:

1.A. Individual citizens are faced with considerable practical difficulties in knowing what government information exists that might help them, searching for it easily and cost effectively, and utilizing it once located.

> Agencies have assumed that by merely making the information electronically accessible, they thereby, somehow, relieve themselves of the obligation of disseminating the information proactively to the public. They incorrectly equate passive information access with proactive information dissemination.

Individual citizens are faced with very substantial barriers to even knowing whether or not government information that might help them even exists or not, and if it does exist, what kind of information is it, where it is located in the labyrinth of government agencies, whether it is available to them or there are restrictions on its availability, how can they search for and retrieve it, and, finally, even if they succeed in surmounting all of those obstacles, will they know how to utilize it once it is found? Of course this problem has always existed to some degree, even in the pre-electronic era., but the advent of the Internet, bringing with it the enormous proliferation of web-availability of agency electronic information, has greatly exacerbated the problem. FirstGov is a step in the right direction, but this assessment will have much more to say about the need for very substantial further development of that portal before it becomes a practical tool.

Moreover, in rushing to publish their public information products on the web, agencies have shifted and tilted the burdens and costs largely (but not exclusively) to the public for (1) even knowing what government information resources exist that could help them, and then (2) searching for and (hopefully) finding that information. In short, agencies have assumed that by merely making the information electronically accessible, they thereby, somehow, relieve themselves of the obligation of disseminating the information proactively to the public. They incorrectly equate passive information access with proactive information dissemination.[46]

> The government must come to understand that merely making information electronically accessible on agency web pages does not relieve them on the responsibility of ensuring that their information is disseminating equitably and cost-effectively to the same publics they always dealt with, even in the pre-Internet era.

Access to government information is essential to:

- the mobility of workers from low job opportunity areas to high opportunity areas;
- the ability to work at home and use distant learning (remote education) approaches;
- the ability to get advice on how to cope with health, safety, security, or related concerns affecting themselves and their families;
- identify and fully understand applicable government rules and regulations affecting their planned purchase of commercial products and services insofar as those informed decisions depend on health, safety, security, and similar considerations;

[46] A more complete discussion of proactive dissemination and passive access is provided in the section entitled "What This Report Is About and What It Is Not About. The issue is also discussed in Finding 5.K.

- identify and fully understand applicable government rules and regulations relating to their planned application for federal benefits and entitlements, including Social Security, Medicare, educational assistance, and so on;
- undertaking personal research for information, such as statistical comparisons, in order to enable more active community level involvement;
- identify and fully understand applicable government rules and regulations affecting their responsibilities to the government with regard to the filing of income and other taxes, compliance with government reporting and recordkeeping laws, and so forth;
- the ability of sole proprietorships and small businesses to identify and apply for assistance and benefits enabling them to secure new capital, identify markets, understand consumer behavior, and so forth; and
- the ability of lower levels of government to interchange information with the federal level to avoid unnecessary overlap and duplication, and to strengthen state, local, and tribal government information outreach programs for their resident citizens.

The government must come to understand that merely making information electronically accessible on agency web pages does not relieve them on the responsibility of ensuring that their information is disseminating equitably and cost-effectively to the same publics they always dealt with, even in the pre-Internet era.

In its response to the Commission's survey, the Association for the Advancement of Retired Persons (AARP), stressed that moving from "offering simple, passive access to government information to actively getting it into the hands of individuals who need it" is extremely important. Some have expressed the fear that a proactive agency program for public information dissemination, along with an explicit agency information dissemination budget, could result in a misuse of agency resources to promote the agency and generate propaganda, rather than to reach out and inform the public. The Commission does not believe that constructive public policy should be thwarted by such unreasonable fears. Furthermore, such a result can certainly be precluded by legislative oversight and carefully framed authorizations and policy guidance, including the use of the Government Performance Results Act (GPRA).[47]

1.B. Individual users of government information are extremely diverse in terms of computer and information literacy skill levels, specific kinds of information needs, economic status, geography, and other demographic variables.

Non-governmental users of information (the general public) are extremely diverse in many respects, and include:

- the citizenry at large;
- business and industry;
- state, local, and tribal levels of government;
- scientists and engineers;
- practicing professionals such as health care practitioners, teachers, librarians and online information specialists, consultants, legal professionals;

[47] EPA offers one good example of the use of agency policy to manage agency information resources; the EPA policy is described under Finding 5G.

- rural populations;
- individual inventors, authors, composers, and artists;
- academic and research institutions;
- public interest groups;
- special interest groups dealing with safety in the workplace, environmental protection, ozone, and many other issues;
- disadvantaged groups that are financially, geographically, medically, or otherwise unable to find and utilize general public information resources (the needs of this group are dealt with in Section 2 below); and
- not-for-profit groups, including foundations.

Consequently, the machinery government has established (the Federal Information Infrastructure) to respond to the needs of these quite heterogeneous populations is very diverse and is customized to the unique needs of each of the population groups. In short, there is no "plain vanilla" or "one size fits all" approach to meeting overall public information wants and needs for government information. Moreover, both the public and the private sectors, including the not-for-profit sector, all have important roles in finding, obtaining, and utilizing government information.

For example, each citizen has a variety of professional, work related, and personal and family information needs. The availability of accurate and timely information often can often mean the difference between success and failure, health and illness, learning or ignorance, and economic growth or stagnation. Information has no real value until it is used for some end purpose, even if that purpose is purely self-enlightenment or recreation.

Information has little or no value when it is:

- not even known to exist;
- unavailable to the public, when it should be available;
- inaccessible to the public, when it should be accessible;
- cannot be efficiently searched for and retrieved by the public; or
- cannot be used by the public because it is irrelevant, inaccurate, untimely, incomplete, formatted inappropriately or is not authentic.

1.C. Dramatic expansion of numbers of internet surfers of government websites attests to the importance of federal, state, local, and tribal government electronic information resources as very important national assets.

The availability of government information on the Internet has increased the number of users and uses of government information (at all levels of government) dramatically. The number of users directly accessing information on the Internet has increased many fold. At the same time, the need for librarians and other information professionals has also increased because citizens are confronted with such a massive volume of disorganized materials that they simply cannot easily find what they are looking for, even if they are highly computer and information literate.

The Ohio Cooperative for Library Cataloging (OCLC) in their most recent annual review of the World Wide Web estimated that the Web now contains about 7 million unique sites, which is almost a 50%

increase over last year's estimate of 4.7 million sites; that the "Public Web," that is, sites that offer content that is freely accessible by the general public, constitutes about 40% of the total Web; and that the Web continues to expand at a rapid pace even though its rate of growth is diminishing over time.

People need access to government information to learn about what their government is doing. They need access to a vast range of information to make their lives better. They need to know of potentially harmful situations and events such as air pollution conditions, dangerous storms, or faulty tires. Researchers, scholars, and product developers need ready and timely access to a wide variety of scientific, technical, and business-related information and data. The cost to citizens of not having information readily available cannot be calculated.

Moreover, taxpayers have paid for the creation of this information and should be able to retrieve and use it. federal, state, local, and tribal government agencies want to disseminate information easily and cheaply to their constituency publics, and share their information with other agencies easily at the same or different levels of government. The private sector, including libraries and educational institutions, as well as not-for-profit and for-profit organizations, needs to acquire government information and data in raw form so that they can add value and provide additional services to the public. Citizens require information from all levels of government, federal, state, local, and tribal. State, local, and tribal levels of government themselves, are both major government information providers for their respective constituencies, and at the same time users who need to efficiently interchange information with the federal level to minimize and avoid unnecessary overlap and duplication in the creation and use of government information resources.

1.D. FirstGov is a step in the right direction but has a long way to go before becoming fully effective.

The announcement of the FirstGov.gov initiative may be the first concrete step in the right direction to make government information available in a truly comprehensive, "yellow pages" approach. Announced September 22nd, FirstGov provides the public with easy, one-stop access to federal government online information and services. The website—located at http://www.firstgov.gov—provides a single online information portal that connects Americans with federal information. FirstGov allows users to search all 27 million federal agency web pages at one time. It can search half a billion documents in less than one-quarter of a second and handle millions of searches a day.

The website also provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the Weather Service during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), and key sites that access state and local government web pages. To increase efficiency, allows citizens to find information intuitively—by subject or by keyword.

The search engine used by FirstGov is a significant technological contribution and a very important and versatile user tool. It is undeniably very fast and quite impressive. However, the search engine needs major improvements in ensuring that information retrieved is relevant to the user request. One key element is to develop an underlying thesaurus and taxonomy to insure that the user is getting closer to the information he or she wishes. Such tools should be linked to applications that help make searches context sensitive, such as through natural language or other applications.

Although FirstGov states that it provides access to *all* government online information, in fact it does not. It covers only publicly available government information. FirstGov cannot address documents that either never were on government servers, but may have been in agency files as paper documents, or

have been removed from government servers, but may still exist in a pre-electronic form, format, or medium somewhere else in the agency.

FirstGov also does not include enough granularity in its groupings to permit the sophisticated information retrieval capability need by many government users. As pointed out above, information users come from many and diverse communities. There is a difference between the general categorization of information and the detailed indexing of information. Information is often categorized into general groups such as travel, medical, or chemistry. These may then be broken down in turn into subcategories (e.g. travel in the U.S., in Europe, in Africa). An example of general categorization is a table of contents. It leads a reader to a chapter or chapters that may contain the desired information.

Indexing, on the other hand, is much more specific. Indexing permits specific bits of information to be found. The index of a book indexes specific words or phases, person names, places, dates, and so on, to the exact pages where they are located. Indexing may also use controlled vocabularies to aid in the finding of information. Helicopters and rotary winged vehicles are the same thing, but two different names. Controlled vocabularies allow information searching to be performed using a specific "controlled word" that brings together several words with the exact same or at least similar meaning.

Using these two concepts together, general categorization and indexing, can permit a government-wide categorization of information while still permitting the more specific identification needed by the organization originally creating the information. Thus there is a need for taxonomies at some--or several-- level(s).

Categorization, classification, indexing, abstracting, cataloging, thesaurus development, and related tools, techniques, and methods are the business of the librarian and information manager. They are technically sometimes referred to as "bibliographic methods."

1.E. The Internet is a long way from being a library.

> The government has an obligation not just to make its information resources available to the public—it has an obligation to help citizens improve their information literacy in finding information, to utilize government information continuously in a lifelong learning context and to help citizens use information more effectively once it has been found it and accessed.

The Internet is not yet a library. Instead, to the ordinary citizen, it is at a stage in its evolution where it is a veritable jumble of information services and information resources that cannot be easily found, searched, retrieved, or utilized. Therefore, librarians and other information specialists are in great demand to organize government information for both public and private sector information providers, to help people find what they need, and to help people evaluate and apply the information they find to their practical everyday challenges, including finding a government entitlement, applying for a student loan, finding a job, researching a particular health care problem, and so forth. Indeed, there is an elite class of information specialists, *government document librarians*, whose unique and specialized skills are directed to helping citizens find the right government information, at the right time, and from the right place. In addition, there is a unique group of about 1,400 libraries across the country that specializes in housing, managing, and preserving government information for continuous public availability and access, namely f*ederal depository libraries*.

In short, government information that is already available to the public can, and should be more easily and cost-effectively accessible, and should have greater practical utility to citizens. The government has an obligation not just to make its information resources available to the public—it has an obligation to help citizens improve their information literacy in finding information, to utilize government information continuously in a lifelong learning context, and to help citizens use information more effectively once it has been found it and accessed.

Agency information resources that are not already available to the public, and which are not subject to statutory prohibitions against disclosure and sharing pursuant to the FOIA exceptions, Privacy Act exceptions, national security legislation, and similar laws, should be reviewed for the purpose of making it available to the public. *In short, the "default" for government information should be to make all of its information resources available to the public, to other agencies, and to other levels of government.*

One of the Commission's Experts, Christopher Burns, suggests that a promising alternative may be to link (agency) collections and their catalogs in a reciprocal access network with a shared search engine and standard metadata. Such a design would allow users of one online library collection to access more precisely the collections of other libraries affiliated in a group that resembles the regional networks and shared catalogs of the traditional library community. Burns points out that when the interests and activities of a user group begin to diversify and the collection of documents of that group comes to include many different formats, the right architecture is not necessarily the traditional approach, which has been to put all materials into a single database. Burns' complete paper is appended included as Appendix 24.

1.F. Helping the public find government information is more critical than it ever was because of the vastness of newly available electronic government information resources (user assistance).

The question of whether electronic information can be located without cataloging, indexing, or offering access *at the document level* is a critical consideration, since it directly relates to the full costs that must be associated with, and budgeted for, to provide public access to government information. By comparison, finding information at the broad, generic level is far easier.

Federal agencies should not be expected to provide an equal level of access to all kinds of information—especially if providing this information without adequate summarizing, abstracting and indexing/metadata, created at considerable cost, means that it is only added to a "mountain of digital objects" that users will have to wade through. Hundreds of thousands of "hits" are almost worse than no hits at all.

The private sector and libraries have traditionally filled an important role in adding value to government information by cataloging, abstracting and indexing, and there is little evidence to suggest that their ability to serve the public through such services has become obsolete. Government should be aware of these efforts, and the full associated costs required to effectively abstract and index information. In some cases, government may find it more beneficial to the public to partner with the private sector and libraries to accomplish the task. Alternatively, government can determine when it is more appropriate to allow the private sector and libraries to assume responsibility for meeting public demands for increased search and retrieval functionality, so long as it does not lose sight of the fact the primary responsibility for the entire life cycle of electronic government information, including the dissemination and permanent public access to government information, without restrictions, to the American public.

If the federal government continues to adopt a "distributed" (dispersed and decentralized) approach to government information availability—i.e., each agency develops a website for the distribution of its own information products and services—then the public, especially those with scant knowledge of the structure of the federal government, will face difficulties in finding government information at the source. *The first challenge for government, then, is to assure that the public does not have to know in advance which agency might hold the information desired*.

The second challenge becomes navigating the agency's website, which can vary widely in complexity and user friendliness. To navigate websites often requires an intimate knowledge of not only the agency's structure but it's internal terminology. It can be very difficult to find a specific item (e.g. a specific document), even if the user knows its name or identifying number. It should be noted, however, that GPO Access's cataloging and locator services and FirstGov, under the authority of the General Services Administration ("GSA") do provide access to centralized search capabilities that allow users to retrieve information from a broad array of agencies and branches of government.

User assistance is of critical importance in facilitating use of electronic information.[48] Technology continues to enhance the means of providing huge amounts of information in electronic formats—whether on disk, CD-ROM or directly through the WWW and the Internet. As the number of resources grows, users are in greater need of tools to help identify both sources of information and data sets—critical components of those information sources—in order to meet their specific needs.

There are several means by which users can gain assistance:

a. personal interface, e.g. in non-profit and corporate libraries or through federal agency user support hotlines;[49]

b. summary source information, provided most commonly in any number of formats as of indices and abstracts of information sources, summarizing both general information sources, as well as specific data sets within general sources;

c. search engines/locator services, used primarily to locate general information resources online effectively and quickly; and

d. search and retrieval technologies, normally specialized software delivered as part of the information product or service and used primarily to locate specific data or data sets once access to a digital information source is achieved.

Several other issues affect the provision of assistance to users. Among the most critical of these—regardless of whether assistance is provided by government, the private sector or libraries are:

1. cost to both the provider and members of the public;
2. quality, often tied directly to the cost of providing the assistance; and
3. innovation, i.e. developing, testing and providing new means of obtaining and using information sources or data sets to meet the public demand

[48] It is also costly, since it requires manpower. A major benefit of the Federal Depository Library Program (FDLP) is that it provides, at no additional cost to the federal government, trained, professional documents librarians as intermediaries to assist users to identify the right information to meet their needs, as well as instruct users on the interpretation and appropriate use of the information. This is an invaluable asset and any restructuring of the FDLP must find way to maintain and enhance this resource. The need for additional training for library and information professionals is discussed in Recommendation 13.

[49] In fact, the government should be more proactive in promoting its information services to the public and offering user support for those services. It also should do more to promote libraries, particularly the federal depository libraries, as additional sources of user support. Conclusion 6 and Recommendation 13 relate specifically to the Federal Depository Library Program (FDLP).

Regardless of whether user assistance is provided by the public or the private sector, however, the public often experiences mixed results. In terms of private sector WWW and Internet locator and search engine services, many such providers rank websites based on special or exclusive—and sometimes economic—agreements with website purveyors or on how frequently websites are requested and successfully found by users. Government agencies are unlikely to enter—and under 44 U.S.C. 3506(d), executive branch agencies are statutorily prohibited from entering –into special agreements with the private sector. More importantly, if the public is not aware that an agency has placed a site on the web or added new information sources to the site, it is unlikely that it will be ranked highly on a private sector service due to a large number of hits.

The federal government has also been somewhat successful in the provision of search and retrieval capabilities to assist users once they have gained access to a website. However, depending on how the agency has organized the information provided through the website, the public can sometimes encounter difficulties in locating specific data—unless they are already well-versed in the technologies of the web or unless they have been able to identify specific parameters to help narrow their search (e.g., the date of a notice; the precise name or public law number of a statute or court decision; or the date or number of a regulation implementing a statute).

The inevitable limitations on availability of government resources, however, demand that the government should undertake only the most necessary user assistance activities and need not duplicate or adopt all types of services that private sector and library providers offer to their customers and patrons. Cost and unmet public needs will always be major factors in the evaluation by government agencies of what user assistance services to provide. In addition, although the government has a general mandate primary responsibility to make widely available the information it creates and maintains, it also has a responsibility to encourage the development of alternative sources for government information, including online sources—whether private or non-profit in origin. Therefore, regardless of what services it develops, government must make them available to the public at large—including private and non-profit sector providers—at little or no cost.

1.G. Transition from the print era to the electronic era has been at lightning speed; ramifications have barely had time to be even partially assessed, both positive and negative consequences.

> The printed word is not dead yet. Is there anyone left by now who does not appreciate the irony of seeing the volume of paper printing at the individual desk level reach a proportion that is hundreds if not thousands of times greater than centralized printing ever was?

In the past public acquisition of government information *depended entirely upon physical mechanisms* — upon government depository and other libraries, upon government and privately-owned bookstores, directly from publishers, mail order from GPO or private redistributors such as order fulfillment houses or other outlets, and agency distribution lists. If a person did not live near a library, they simply could not get the information easily or quickly. While this system worked well in the ink-on-paper era, it now has evolved rapidly into an electronic, networked-based government information environment. Younger people, especially, do not want to access information in paper. They are accustomed to using the Internet for quick and easy access to information wherever and whenever they need it.

The electronic mode makes it possible to deliver information wherever the reader may be (for instance, to his or her computer in the home or workplace, or by wireless technology to anyplace), to present information that cannot be captured in print (such as video appendices, tables that can be

manipulated and so on), and to facilitate use of information through quality interfaces and search capabilities.

The Internet is the medium of choice for many in business, education, and general information seekers. The Internet does not represent merely an incremental improvement, but a fundamental and far-reaching change in the distribution and dissemination of information in all forms, including government information.

Before the World Wide Web, publishers viewed the Internet as an add-on to print, CD-ROMs, and microfilm. Paper was the primary medium for distribution of information. It is still preferred by many people, but is not the medium of choice for the future. Now many publishers and most young people view the Internet as the primary source for information. Print has become the add-on.
But much agency information is not available on the web, or else it has been taken down even though it was once available. For example, in one recent study by the University of California at Berkeley, a list of approximately 70 electronic government publications which previously were available via the Internet (as text, html or pdf files) now, for a variety of reasons, are no longer available. These files may have been removed because the publications were updated or revised, the issuing agency believed there is no longer a need to provide access to them, the issuing office no longer maintains their website, or for other reasons (Judy).

The printed word is not dead yet. Is there anyone left by now who does not appreciate the irony of seeing the volume of paper printing at the individual desk level reach a proportion that is hundreds if not thousands of times greater than centralized printing ever was?

Librarians and others have expressed concern about the assumption than all information can be delivered and used as well or better electronically than in other forms. Commenting on the draft report, Jill Pigeon of Hollins College said, "Tangible documents are better in certain cases for a variety of reasons, ranging from guaranteed historic value and availability to ease of use, [as well as] ensuring access to the technologically or financially disadvantaged."

1.H. Return on investment to the taxpayer of government information as a public good is still significantly undervalued by the executive, legislative, and judicial branches.

Dissemination of government information and its use create significant public benefits for all users. Information enables all Americans to learn about their government, issues affecting their quality of life, regulations related to the work place, how to grow healthy children and healthy plants, research on health and medicine, the exploration of space, etc. More timely release of regulatory information fosters compliance with various laws and rules affecting the environment, health, and the work place.

Elected officials, economists, and policy analysts repeatedly remind us that we live in a knowledge society where information is the key resource and asset. In this environment, information and learning become the key drivers to maintaining national superiority in science, technology, innovation, and economic growth. The Internet has transformed education and health care. More and more colleges, universities, and private companies offer courses and degrees to users remote from college campuses. Corporations use the Internet to disseminate training and education to employees around the globe. The wide availability of health information is producing consumers with more knowledge of diseases, options for healing, health, and wellness. It is essential that citizens have government-produced information on which they can rely.

As the world's largest producer of information the federal government has a unique and critical role in the information society and the nation's future scientific and economic development. The investment made by the taxpayers in research, data gathering, and the dissemination of information has been and will continue to be a key resource that returns enormous benefit to the economy and society. The maximum return on this investment and the maximum public good can be achieved only if government produced information and research results are disseminated in an effective manner on the Internet.

1.I. Cost-sharing of public data among user groups is no longer the big issue that it once was.

At a recent meeting of the Association of Public Data Users (APDU) it was reported that only seven years ago, in 1993, an APDU consortium of 18 members spent $5,000 to purchase a set of Public Microdata User Samples (PUMS) tapes from the Census Bureau, so that individual APDU members would only have to pay about $1,700 each for the set.

The inference is that cost sharing of public data is no longer the big issue it once was in most (but not all) areas. Of course the biggest reason for this is because data is now available free on agency websites.

This example also makes clear that agency efforts to charge more than the cost of dissemination can and will be thwarted by cooperative purchasing or other redissemination.

1.J. Direct web surfing is fine, but bypassing the utilization of traditional intermediaries in searching for government information is creating both obvious and not so obvious dysfunctional consequences.

As more and more public users develop their computer and information literacy skills to the point where they are searching for government information directly, by-passing the use of traditional intermediaries such as librarians and information brokers, many apparent as well as many not-so-apparent consequences are cropping up. Some of these consequences might have been anticipated, but others are not so obvious. For example, in the words of a participant at a recent APDU meeting, "the policy behind the (government information) product is being lost as people access data directly without going through intermediaries such as librarians, statisticians, data analysts, records specialists, archivists, museum specialists, and so on." In the NCLIS staff authored White Paper on "Some Paradigms: Myths and Realities" it was also pointed out that, in the broadest sense, the separation of content from its parent context was another dysfunctional consequence with disquieting ramifications. For one, the separation of content from parent context (or what in records management parlance is "provenance") is frustrating attempts to evaluate the credibility of the information because its source and origin is "hidden".[50] In another example, a government documents specialist, searching GPO Access under Browse Electronic Titles, working down a list to find that the first and second documents were found, but the third took the specialist to a website instead of to the document itself.

1.K. Electronic government documents often, quite literally, appear one day and disappear without a trace the next.

One government documents specialist estimates that at least 10% of the documents linked to by the GPO Access portal for the use of federal depository libraries and others have been taken down from the servers that originally housed them. Many documents specialists fear, with documented evidence,

[50] The White Paper is available in Appendix 11 and at http://www.nclis.gov/govt/assess/paradigm.html.

that if a document was "born digital" and never initially came to a depository library in paper form, no depository library will ever have it. While in some cases agencies formally announce plans to discontinue a public information product, as required the Paperwork Reduction Act,[51] in many cases they do not. In some cases involving multi-format publications, users cannot distinguish between a multi-format publication losing one of its formats and a web-only publication completely disappearing.

2. FINDINGS RELATING TO DISADVANTAGED AND SPECIAL POPULATIONS

2.A. The hard core computer "disaffected" are a special population.

According to a recent report released by the Pew Internet & American Life Project, half the adults over 18 years of age in American, approximately 100 million people do not have Internet access. The survey, conducted in the April 2000 to August 2000 timeframe, found that:

- A third of the Internet non-users, about 31 million people, say they are likely to stay away from the Internet, mainly to surf the Internet;
- Another 25% of the non-Internet users say they probably will not venture online not just for the purpose of surfing the Internet, but sending and receiving e-mail, using any kind of word processing or spreadsheet or other kinds of software for personal or business purposes, searching online databases, and so forth;
- On the other hand, 12% of those without Internet access say that they definitely will go online, and 29% of non-Internet users say they probably will get Internet;
- 54% of those not online believe the Internet is a dangerous thing;
- 51% of those not online say they do not think they are missing anything by staying away from the Internet;
- 39% of those not online say the Internet is too expensive;
- 36% of those not online express concern that the online world is a confusing and hard place to negotiate;
- 13% of those who are not online (about 12 million people) have used the Internet at sometime in the past, but have since dropped off; and
- Of those who have dropped out, 21% say they no longer have a computer, 14% say they have changed jobs, 11% say paying for Internet access was too expensive, 9% say they didn't find the Internet very interesting or useful, and 8% say they were worried about their privacy.[52]

Of course it is easy to say that the Internet is a brand new communications medium, which is just at the beginning of its product life cycle. Inevitably these numbers will change, but the Commission's purpose in citing the survey findings here is primarily to underscore three points:

First, the government has an obligation to respond to the government information needs *of all of its citizens*, not just those who are highly computer literate and information literate. To the extent that a significant proportion of the population may never acquire Internet literacy, their needs must be provided for by other means and communication mediums.

[51] Section 3506(d)(3) of the Paperwork Reduction Reauthorization Act of 1995 states that agencies shall "provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products."
[52] [Insert citation; not yet in bibliography]

Second, the government must provide for the *transition of society* from its current, still largely paper-based mode, to the Internet-of-the-Future promise, by carefully subdividing its planned policies related to e-Gov and the policy implementation into *short, medium, and long-term timeframes programs and projects*.

Third, the government has an obligation to educate and train information professionals who, in turn, can train the general population in how to find and use government information. It is not enough merely to disseminate information on the Web, and then "walk away from the postings" so to speak.

2.B. People with disabilities stand to gain the most from the new technologies, which give them tools to gain greater independence and social integration.

The Commission strongly believes that any effort to improve government information dissemination to the public must include those with disabilities. They are strengthened in this belief by a study by the Disability Statistics Center at the University of California.[53] This study states that people with disabilities stand to gain greater independence and social integration. However, they have among the lowest rates of use, and many are poor and cannot afford computers capable of navigating the Internet. Lower-cost computing and access, simpler user interfaces, and training and support in the use of hardware and software are essential, if this segment of our population is to effectively move into the new age.

The Commission identified nine organizations that it believed represented a cross section of the disadvantaged groups, and surveyed these groups for the purpose of ascertaining where they believed existing public information dissemination policies and programs impacting disabled and disadvantaged, and other special populations could be strengthened.[54] Of these, seven responded.

Of the seven responses received, only one organization, the National Library Service (NLS) for the Blind and Physically Handicapped within the Library of Congress, reported having a policy on dissemination of government information, and this only insofar as it meets the needs of this particular special clientele. This policy is folded into the NLS Collection Building policy, which includes NLS's responsibility for making library materials available for the blind and physically handicapped.

Alternatively, four of those surveyed reported having, or planning, programs to reach their clientele:

- American Association on Mental Retardation. RADAR (Focused Research and Reporting on Critical Developmental Disability Issues) is an online data warehouse to be used for data mapping and trend analysis.
- Association for the Advancement of Retired Persons (AARP). Ageline database of articles and book summaries, licenses to several search services. Plans are for it to be added to the AARP website later this year.
- Columbia Lighthouse for the Blind. Strategic partnership with a Colorado-based audio bookstore (ReelBooks Internet, Inc.) to develop an e-commerce business operated by employees who are blind and visually impaired.
- National Organization on Disabilities. Plans for a program to reach business and volunteer groups on how to effectively serve those with disabilities.

[53] [Insert citation]
[54] The survey results are available in Appendix 27 and at http://www.nclis.gov/govt/assess/special.html.

Five of the organizations surveyed identified information they do not receive from government, but which would be useful to their memberships/clienteles. These include:

- Information on key issues on development disabilities (abuse, housing, aging, employment and transportation);
- Information on e-commerce and acquiring career skills to increase job marketability;
- Popular consumer information from various federal agencies and time-sensitive information;
- Information on the "how-to" part of disability work; and
- Items that have sound, text or captions, including streaming videos and websites that talk.

Alternatively, five of the organizations identified government information that they now receive and that their memberships/clienteles need or want, including:

- Vital policy, financial, research and service information on issues and trends in mental health and substance abuse services;
- Social Security, Medicare, and Medicaid information, obtained through website links;
- Consumer documents and research and statistical information; and
- Information on Section 508 of the Rehabilitation Act, and guidance on accessible websites.

Additional details relating to the findings of this special survey are available in Appendix 27.

2.C. Schools and school age children are a disadvantaged special population.

More than 95% of all U.S. public schools have access to the Internet. A number of public and private activities have made this connectivity possible. The "digital divide" is a reality, but it is gradually improving although it will probably never disappear entirely. Just as reductions in price resulted in VCRs becoming ubiquitous in U.S. households, reductions in the price of computers and commercial offerings of free Internet access are bringing the Internet into more and more schools. The use of computers and the Internet by more school children also is stimulating sales and access. According to Nielsen/Net Ratings, Internet users with annual incomes between $21,000 and $33,000 spent more time on the Internet than the average Internet user, and this is reflected in the computer and information literacy of school age children.

Every parent knows how his K-12 children are attracted to the excitement of using computers at home and at school to do research, to play games, to do homework, and for other purposes. It has become a cliché that the parents must sometimes learn how to do something on their PC's by asking their children. The federal government has done some innovative things in making its information more easily understandably by, and usable by K-12 school age populations. The Commission believes federal agencies, for the most part, are already well sensitized to the opportunities in this area, but it should be carefully monitored by the Department of Education and other agencies.

2.D. Older populations are a disadvantaged population.

The Pew Internet & American Life Project[55] mentioned earlier found that "Most of the strongest Internet holdouts are older Americans, who are fretful about the online world and often don't believe it

[55] [Insert citation here and where mentioned earlier; add to bibliography.]

can bring them any benefits." *More specifically, 43% of all adults not online are seniors who are 60 or over*.[56]

At the same time, articles in newspapers and magazines record tales of older citizens using the Internet to exchange email with grandchildren, learn more about health care and other issues of interest, and chat with peers. So it would appear that despite initial suspicions, in fact, senior citizens represent a fast-growing segment of Internet users. Bottom line, online access extends across the whole population spectrum and continues to expand its reach exponentially.

2.E. The visually impaired are a disadvantaged population.

Some information specialists are working together to make Adobe PDF files more easily accessible to the blind and low vision computer users, and it is hoped that the next release of the Adobe Acrobat Reader will contain this feature.

2.F. The hearing impaired are a disadvantaged population.

Several of the associations serving the hearing impaired (as well as other disadvantaged populations) strongly recommend that these populations go to the Access Board's website to read about the rules for Section 508 of the Rehabilitation Act Electronic and Information Technology provisions.[57] The Access Board is an independent Federal agency devoted to accessibility for people with disabilities. It operates with about 30 staff and a governing board of representatives from Federal departments and public members appointed by the President. Key responsibilities of the Board include:

- developing and maintaining accessibility requirements for the built environment, transit vehicles, telecommunications equipment, and for electronic and information technology;
- providing technical assistance and training on these guidelines and standards; and
- enforcing accessibility standards for federally funded facilities.[58]

2.G. Small businesses and sole proprietorships are a disadvantaged population.

While there is some disagreement among federal agencies as to how far the government could and should go in providing special assistance tools to help sole proprietorships and small businesses not only find and utilize needed government information, but comply with regulatory paperwork requirements as a way to reduce their burden, the Commission believes in a very real sense that sole proprietorships and small businesses are a disadvantaged population that should be afforded special priority just as special assistance is given to the above disadvantaged groups. Government information is a key to helping them compete and continue to grow, prosper, and provide increased job opportunities.

2.H. There are other disadvantaged and special populations.

Other disadvantaged populations include a wide variety of impairments not otherwise covered in the preceding sections. In every case there is an "information literacy gap" experienced by these special and disadvantaged groups, meaning the gap between knowing and not knowing what government

[56] [Insert citation]
[57] The Rehabilitation Act material is available at http://www.access-board.gov/sec508/status.htm.
[58] This description of the Access Board is from http://www.access-board.gov/indexes/aboutindex.htm.

information exists, what information is available to them, how to search for that information, how to access that information in formats and mediums most useful to them (oftentimes special formats and mediums expressly designed to compensate for their disadvantage), and how to utilize that information once retrieved.

Empowering the disadvantaged by increasing their opportunities for improving their information literacy skills should be a constant beacon guiding government's efforts to enhance the value of its public information resources. Strategies for accomplishing that not only include developing and providing specialized hardware and software such as Braille equipment for the blind, nor only enacting legislation such as Section 508 of the Rehabilitation Act, but the day to day vigilance of agency officials to the consequences of their actions, both positive and negative, for the disadvantaged.

In some cases language problems, both with immigrants as well as with some Native American populations, are the most serious barriers, and underscore the interrelationship between the "four R's"—reading, writing, and arithmetic, and computer and information literacy.

Finally, it must be remembered that in some disadvantaged populations, such as those on Indian reservations, many individuals are without even basic human infrastructure service needs, such as toilets, telephones and clean water, much less computers.

2.I. Agency guidelines for disadvantaged individuals are not yet implemented.

In its e-Gov agency survey OMB found that agencies uniformly supported web access guidelines for the disabled. However, most agencies requested that deadlines for meeting accessibility standards coincide with the adoption of standards, availability of commercial off-the-shelf products, and agency appropriations.

3. FINDINGS RELATING TO ACADEMIC, RESEARCH, AND RELATED INSTITUTIONS

3.A. Return on investment in government information as a public good is highly valued by academic and research institutions.

The federal government funds a substantial portion of all scientific and technical research. This research helps the U.S. maintain its competitive edge in medicine, science, and technology. Failure to widely disseminate research results means that this valuable asset remains unused and unproductive. Inaccessible research results cannot be transformed into products and processes that contribute to economic growth and productivity. In spite of the efforts of the federal STI organizations, NTIS estimates that approximately 25% of reports that should be submitted to them under the American Technology Preeminence Act are not submitted, and are therefore not available for current and future use. While no precise numbers are available, the Government Printing Office also estimates that there are a significant number of "fugitive documents" that come under the statutory mandate for inclusion in its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP), but are never provided to GPO for dissemination.[59]

Scientific and technological development does not just happen. Scientists and engineers rely on a wide body of previous and current work to provide the foundation for their work. In addition, they learn about new methodologies, successful and unsuccessful experiments and processes. Scientific and

[59] The need for a safety net is discussed in Finding 5.L.

technological advances often take years. Chemists, physicists, mechanical engineers, civil engineers, and others depend on work done in the past. This work must be archived, made available for access, and be preserved, so that we can continue to learn from the past. J. Robert Oppenheimer in his book, *Uncommon Sense*, stated, "The History of Science is rich in examples of the fruitfulness of bringing two sets of techniques, two sets of ideas developed in separate contexts for the pursuit of new truth, into touch with one another."

Today, some areas of science are becoming highly interdisciplinary. For example, the development of new building materials involves chemists, mechanical engineers, structural engineers, and materials scientists. Development of artificial limbs may involve mechanical engineers working with orthopedic surgeons and materials scientists.

4. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—GOVERNMENT-WIDE POLICY LEADERSHIP AND OVERSIGHT

4.A. The Federal Government's Role Is Critical In Formulating and Overseeing Public Information Dissemination Policy

> Federal agencies are now caught between the proverbial devil and the deep blue sea. On the one hand, they are being correctly congratulated for the superb initiative they have shown in mounting more and more of their information resources on their websites, and making their information products available and accessible in creative and innovative ways. On the other hand, they are also being correctly criticized for the absence of effective internal and external coordination of their policy development and implementation as those policies pertain to the electronic publishing, permanent availability of holdings, effective search and retrieval of their information, authentication of their document images, and related matters.

As the Commission stated in the above prefatory materials, the government's movement toward e-Gov is a highly commendable initiative. However, for the benefits and values of the World Wide Web and the Internet to be fully realized and exploited, the federal government cannot abdicate its government-wide policy leadership and oversight role in developing and enforcing policies, standards, and guidelines for:

- Electronic publishing;
- Permanent public information availability and accessibility;
- Permanent records retention;
- Integrated information life cycle management;
- Preservation of government Information to guard against the obsolescence of storage and handling mediums and formats;
- Authentication of official agency electronic information; and
- Other purposes.

The federal government plays a strategic role in creating, collecting, organizing, and providing government information for the public. For example, the government has taken the lead to establish some landmark, highly effective public information resources in past years. They will always stand as beacons to guide the development of similar resources in the future, not only at the federal level, but

also at lower levels of government, and even in foreign countries. These include, for example, the databases, clearinghouses, specialized information services for the disadvantaged, electronic information services, and other public information resources of the:

- Department of Agriculture (USDA);
- Department of Defense, primarily through the Defense Technical Information Center (DTIC);
- Department of Energy (DOE);
- Environmental Protection Agency (EPA);
- National Aeronautics and Space Administration (NASA);
- National Library of Medicine (NLM);
- National Oceanic and Atmospheric Administration (NOAA);
- Securities and Exchange Commission (SEC);
- National Technical Information Service (NTIS);
- Government Printing Office, including the Federal Depository Library Program (FDLP) and the Superintendent of Documents' Sales Program; and
- Major portals for government information including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and now FirstGov.

All of these resources have made it easier for researchers, students, job seekers, individuals with health problems, and innumerable others, to find and use needed government information. However, much work remains to be done.

Federal agencies are now caught between the proverbial devil and the deep blue sea. On the one hand, they are being correctly congratulated for the superb initiative they have shown in mounting more and more of their information resources on their websites, and making their information products available and accessible in creative and innovative ways. On the other hand, they are also being correctly criticized for the absence of effective internal and external coordination of their policy development and implementation as those policies pertain to the electronic publishing, permanent availability of holdings, effective search and retrieval of their information, authentication of their document images, and related matters.

The agencies obviously don't like this dilemma. Existing government-wide policy leadership and oversight machinery is simply inadequate to cope with the policy and guidance challenges confronting the entire government. *There needs to be a single, government-wide focal point for policy development, coordination, and oversight, for the government as a whole, and within each branch.* We will have much more to say about this finding in the following Conclusions and Recommendation sections.

4.B. The time is ripe for the Congress to direct a review of the hundreds of laws that have been enacted since the birth of the republic, for the purpose of assessing the cumulative, overall impacts and effectiveness of the statutory foundations for public information resources availability; the current overall statutory foundation for public access to government's information is too heavily tilted toward providing a legal framework for adversarial proceedings, and too lightly oriented to regarding government information as a national asset needed by all Americans.

The Commission finds that when one looks at the two major cornerstones of the public access laws, the Freedom of Information Act, and the Privacy Act, they are essentially legal frameworks for adversarial proceedings. That is to say, the rights of government are pitted against the rights of citizens. What is completely overlooked in this construct is the idea that government's data, information, and knowledge resources are themselves a strategic national asset. This is a missing "building block" in the public information dissemination statutory foundation.

Since the birth of the Nation, Congress has enacted hundreds of laws with provisions of one kind or another requiring federal agencies to establish some kind of public information resource.[60] These laws fall into several different major categories, and the Commission has identified some illustrative examples in each category.[61] For the most part, during the early stages of bill drafting, the rather well-established processes of legislative history review, combined with the subject matter expertise of knowledgeable experts in the subject matters in question (e.g. environmental law, energy law) succeed in identifying most unnecessary overlap and duplication, and both substantive and legal inconsistencies with preceding legislation. Nevertheless, the Congress has not utilized the cumulative public information laws database for the purpose of eliminating contradictory policies in operating information dissemination programs or for assessing how the government's overall public information dissemination program could be strengthened, especially in the light of the Internet. The Commission could be directed by Congress to undertake this analysis, but would prefer to do so with the assistance of the Congressional Research Service (CRS), the General Accounting Office (GAO) and the National Research Council.[62]

Meanwhile, the Commission finds that when one looks at the two major cornerstones of the public access laws, the Freedom of Information Act, and the Privacy Act, they are essentially legal frameworks for adversarial proceedings. That is to say, the rights of government are pitted against the rights of citizens. What is completely overlooked in this construct is the idea that government's data, information, and knowledge resources are themselves a strategic national asset. This is a missing "building block" in the public information dissemination statutory foundation.

4.C. The Federal government's public information resources management obligations are not fulfilled merely by website postings.

Despite statements and inferences to the contrary, just because federal agencies are, very commendably, making such massive quantities of government information electronically available to the public, much more easily accessible, and for free in most cases, on their websites, does not in any way mitigate or alter, much less eliminate, their legal and ethical responsibilities to ensure the:

- Permanent public availability of government information for the public;
- Preservation of government information, notwithstanding the continuing obsolescence of formats and mediums in which it was originally created and is stored and handled;
- Permanent records retention of government information notwithstanding the ephemeral nature of e-mail messages, website postings, and other electronic information;
- An efficient, effective, and easy-to-understand means for the public to ascertain the authenticity of official government information;

[60] Appendix 32 is a compilation of Federal statutes pertaining to public information dissemination passed during the 105, 106th and 107th Congresses.
[61] The categories are available in Appendix 13 and at http://www.nclis.gov/govt/assess/statcat.html.
[62] The need for such an analysis is discussed in Conclusion 4 and Recommendation 15.

- The continuous integrated life cycle management of government information from creation to disposition;
- Adequate safeguards be developed and put in place to guard against the inadvertent or fraudulent disclosure of public information held in trust by the government for private individuals, businesses, and others; and
- Protection of sensitive national security and foreign information.

What is "missing" is an overall, information life cycle framework for meeting these requirements in an integrated, "single, one stop" fashion. When agency officials create new information (e.g. whether a publication, an e-mail message, a report, or some other document), or receive information from another office inside or outside the agency, certain statutory and agency-mandated requirements must be fulfilled. By using a systems approach to dealing with this problem, the Commission believes the enormous frustrations faced by individual agency officials, agency management officials, and the government-wide information services and information management mission agencies such as GPO, NTIS, and NARA, can be substantially alleviated. *A key idea the Commission recommends is the development of a fully integrated, Information Life Cycle Management software module.*[63]

Admittedly, OMB Circular A-130 does call for the integrated life cycle planning for information, and outlines objectives for that planning process. *However, the requirement fails to stress the linking of that concept to the broader goals of information resources management.* Instead, the Circular seems to exacerbate the problem of dealing with an intangible resource such as "information" because management's focus for at least four decades has thought of "information resources" as primarily hardware and software. Yet, the Circular's policy framework emphasizes *both* **content** and technology under the information management heading. However, in the planning context, the bias is toward information *systems,* rather than use of the information content.

4.D. The federal government should make government information openly available in readily reproducible form without any constraints on subsequent uses.

This general principles that the 1982 NCLIS Public Sector/Private Sector Task Force first articulated, have stood the test of time, and the current study reaffirms the soundness of these principles notwithstanding the dramatic changes that have occurred in the interim because of the tremendous use of electronic information handling technologies. Several of these key general principles are ones on which the Commission relies in making the case for continuing the mission of NTIS regardless of its federal organizational locus. Specific reasons for NTIS, and the other central information services and information management entities with government-wide missions to continue in this critical role, even in the face of the dramatic increases in agency website utilization for public information, are covered in greater detail below in Section 7 dealing specifically with NTIS.

The core idea here is that the public interest is best served by a diversity of sources and channels for access to government information. This is reaffirmed by the requirement of Section 3506(d)(1)(A) of the of the Paperwork Reduction Act that agencies shall "(1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through (A) encouraging a diversity of public and private sources for information based on government public information." Agencies should not refrain from value–added information dissemination services when that is consistent with their missions. However, agencies may not frustrate private sector

[63] This concept is explained in more detail in the White Paper available in Appendix 12 and at http://www.nclis.gov/govt/assess/infolife.html.

redissemination activities by imposing restrictions or by limiting private sector access to electronic formats. Commenting on the report of Panel 4, Henry H. Perritt, Jr., of the Chicago-Kent College of Law at the Illinois Institute of Technology, said "The most important things to avoid are government-sponsored monopolies, in which agencies enter into arrangements with private entities to lock up government information through copyright or copyright-like arrangements. Title 17's prohibition on copyright of federal information should be honored broadly." The Commission strongly concurs.

4.E. Certain key necessary information preparation tasks required before posting electronic documents to agency websites are inherently governmental functions (public goods) and should be budgeted for, and financed using congressionally appropriated funds, not financed by indirect cost recovery tools such as user fees.

In its earlier report this year to the Congress dealing specifically with the planned NTIS closure, the Commission said that:

> The Congress (should) annually appropriate sufficient funds beginning in FY 2000 to finance that portion of legislatively mandated NTIS activities and services which are inherently governmental in nature… These activities and services include the orderly collection, organization, preservation of, and permanent public access to scientific and technical information of potential use to future generations of researchers."

The current study has not caused the Commission to modify its stance in this regard. On the contrary, the current study's findings buttress the above position in even stronger terms.

Certain costs incurred by any central information service and information management agency with a government-wide mission (not just NTIS) that are inherently governmental in nature include: collection or acquisition, processing using scanning and microfiching and archiving, indexing and abstracting and cataloging, creating and maintaining the database itself for Internet access, mounting the full text of reports online, and maintaining the historical collection of files. In some instances these services are provided by department central information service organizations, such as the Office of Scientific and Technical Information (OSTI) in the Department of Energy or the Defense Technical Information Service (DTIC) in the Department of Defense, which feed their non-classified information into NTIS already acquired, indexed, and stored. The expenses that must be incurred to defray the costs of these activities are absolutely necessary to ensuring the accessibility of the information; they cannot be avoided, nor can they be "automated" as if by magic. They are human-intensive and require the expertise of experienced STI information professionals.

An information facility such as NTIS cannot "acquire" (the technically precise term) an official agency R&D report information product if it is not in appropriate form. Moreover, the product must be adequately described, such descriptions must be in a proper database, that database must be online, and the full text must be online, and it must be archived. If these conditions are not met, the information is not identifiable and therefore not useable.

Additionally, these costs are each completely independent of the specific user. They are necessary for the access in general, not for the individual. They represent capital investments in the means for providing access, not the costs in serving any specific individual.

There are some exceptions to these inherently governmental expenses that are discussed below in Section 7.

Finally, there is room for consolidation, simplification and avoiding unnecessary overlap and duplication among agencies with central information services and information management functions, as will be pointed out below.

4.F. The cost of disseminating information to the public is neither free to the taxpayer nor can it be buried as an overhead cost, but, rather, should be considered openly as an essential and integral cost of an agency's doing business.

> The cost of disseminating information to the public is usually overlooked by agencies ... Indeed, many Internet gurus say, "the cost of dissemination is an outmoded concept." **The Commission completely disagrees with this view.**

The cost of disseminating information to the public is usually overlooked by agencies when they prepare detailed project and program plans, enter into contracts, and prepare their annual budget plans for the President to review and consolidate, and eventually the Congress to appropriated funds for. Indeed, many Internet gurus say, "the cost of dissemination is an outmoded concept." The Commission completely disagrees with this view.

The penalty of that viewpoint is that too often the public is short-changed by either not receiving the information at all, or receiving only some of the information generated. This is particularly critical in the instance of information generated as a result of the government's awarding contracts to private contractors for undertaking R&D work, but it is equally true of contracts with the private sector in other sectors, including education, the environment, energy, national defense, and so on.

> Disseminating information to the public should be elevated to the status of a line item in both individual agency budgets, and the overall President's budget. There must be an information dissemination budget, just as there is an information collection budget. While this action alone cannot ensure adequate funding, burying public information dissemination expenses in overhead accounts is completely inappropriate and counter-productive in the Information Age.

In some cases the dissemination of government information to the public is an absolutely critical requirement (as in the case of R&D contracts). There are other instances, however, where this requirement is less critical. However, the example of the Department of the Navy's Diving Manual is instructive in this regard. The Navy initially intended that that product would be used exclusively by Seabees and other Navy personnel in official government diving and salvage operations, but citizen-divers, diving instructors, and others soon saw the efficacies of using the excellent information contained in the Manual for general purposes, especially in training and certifying young people in Scuba diving and related recreational activities.

Disseminating information to the public should be elevated to the status of a line item in both individual agency budgets, and the overall President's budget. There must be an information dissemination budget, just as there is an information collection budget. While this action alone cannot ensure adequate funding, burying public information dissemination expenses in overhead accounts is completely inappropriate and counter-productive in the Information Age.

In fact, the Commission believes that the Congress should reserve **at least** three one--hundredths of one percent (**.03%**) of all funds appropriated for research, development, demonstration and comparable government and government-funded activities to fund the dissemination of the results of such activities through the proposed Public Information Resources Administration (PIRA). **This would ensure that $300,000 was available for identification, acquisition, cataloging and indexing, and dissemination for every $1 billion spent on research.**

Many statutes reviewed by the Commission as part of this study authorize, and even mandate, the dissemination of research results, best practices and model programs as an integral part of the program. Yet, the funding for this dissemination is rarely identified as a specific cost in either the authorizing or the appropriations language. The Congress must recognize through authorizing statutes and appropriations that government-funded research and development are incomplete without dissemination of the results. In fact, the Commission believes that the Congress should reserve at least three one-hundredths of one percent (.03%) of all funds appropriated for research, development, demonstration and comparable government and government-funded activities to fund the dissemination of the results of such activities through the proposed Public Information Resources Administration (PIRA) and other STI dissemination programs. This would ensure that $300,000 was available for identification, acquisition, cataloging and indexing, and dissemination for every $1 billion spent on research. This is a modest investment to ensure the proactive dissemination of the research results. [64]

4.G. A comprehensive, authoritative online inventory of publicly available government information holdings is essential, and complements individual agency inventories.

An online inventory of publicly available government information holdings is essential, and complements individual agency inventories. A recent agency survey by OMB supports this idea, "provided that first, the information was restricted to public information, and second, any effort had adequate funding." The OMB report went on to say that some of the agencies surveyed suggested that new standards for information posting might be necessary, and others recommended that nay new effort take into consideration past attempts at government information inventories. The Commission's research into these past attempts convinces it that they should not be embarked upon unless and until they have top Legislative and Executive endorsement. To promulgate the requirement with lukewarm endorsement is a recipe for failure.

4.H. Absence of government-wide detailed guidance is hampering interagency information sharing.

The main body of the OMB Circular A-130 is concerned primarily with information management and "(t)he *free flow of information* between the government" and *not* information *technology* (IT). The Circular correctly recognizes that exploitation of the value of information is not an information technology issue—it's an information resources management issue. The circular points out that IT is not an end in itself, but rather is only one set of resources that can improve the effectiveness and efficiency of federal program delivery. Human resources, financial resources, and property and equipment resources are also all important and needed.

[64] In FY 2001, $85 billion is proposed for federal R&D funding. Reserving three one-hundredths of one percent of that R&D budget would provide approximately $25.5 million for public good functions necessary to ensure the dissemination of the research results.

Unfortunately, none of the Circular's "Basic Considerations and Assumptions," however, addresses interagency sharing of information. In fact intra-agency and interagency sharing of government information is specifically excluded from the definition of the term *dissemination* in the Circular. Sharing of information *systems*, not information *content* is the focus of the policy requirement.

Notwithstanding, paragraph 7k of the Circular, "Considerations and Assumptions," does state, "The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of federal research and development funds."

Ironically, in another section of the Circular, (8(a)(d)), agencies are directed to "Seek to satisfy new information needs through interagency or intergovernmental sharing of information, or through commercial sources, where appropriate, before creating or collecting new information." However, this is a somewhat negative construct, not a truly positive construct. A more positive construct would encourage interagency sharing of information *even if no new information needs were identifiable*, on the grounds that *most of the time one agency simply does not even know what another agency has, so how can it ask for it or benefit from it?* The concept of "knowledge diffusion" is a much more positive concept that should be incorporated into the Circular's revisions, so that interagency sharing of information resources is seen as a part of an overall government knowledge diffusion goal.

It has long been recognized that information needs and uses can never be predicted in advance with accuracy. Former Vice President Hubert Humphrey once remarked that he often feared that the answers needed to solve the challenge of dealing with cancer lie hidden, long forgotten, in some data vault somewhere, uncataloged, unindexed, and unabstracted. Certainly immediate needs that led to the information's creation or collection in the first place can be predicted or the agency and the Congress would not have funded its creation, but the *potential uses* of information very often materialize and manifest themselves only long after the information was produced. Like any resource, by amplifying and magnifying information uses beyond initial expectations, the government can multiply the information's value many-fold.

In short, most of the interagency efforts to share government information among federal agencies have been the result of *informal and collegial efforts within communities of mutual interest*, not because they have been directed as part of a federal information policy. Obviously, government interfaces with the general public, e.g. NTIS, GPO's Superintendent of Documents, are also available to federal agencies. These services, however, may not fulfill the information needs of specific communities. In many cases federal agencies have no central information content management organization and thus no mechanism to promote sharing.

4.I. Safeguarding sensitive, proprietary and nonpublic information are legitimate barriers to interagency sharing.

Information sharing among federal agencies does not mean that *all* federal information is available to the general public. There are many statutes that restrict federal employees from sharing information not released to the public. Among these are:

- The Procurement Integrity Act (41 U.S.C. 423) restricts the release of source selection and contractor bid and proposal information;
- The Trade Secrets Act (18 U.S.C. 1905) makes it a crime to improperly release contractor trade secrets and other confidential information outside the Government because improper release of data could result in claims from the owner for breach of contract or loss of business;

- The Privacy Act (5 U.S.C. 552a) restricts release of personal information about individuals, such as for private marketing purposes; and
- Freedom of Information Act (FOIA) (5 U.S.C. 552) as Amended by Public Law 104-231, 110 Stat. 3048, includes several exemptions relating to release of federal information to the public.[65]

4.J. There are budgetary and organizational barriers to interagency sharing of government information.

In addition to legal and policy constraints, barriers, and obstacles, there are significant technical, budgetary, and organizational challenges to the active intergovernmental dissemination and sharing of government information content. The President's Information Technology Advisory Committee (PITAC) reported in 1999 [Information Technology Research: Investing in Our Future] that such technical challenges developing significant improvements in systems and methods for accessing data—including high performance data storage and tools to locate and present information, and developing reliable, secure networks and software to deliver and protect critical data needed to be addressed. The PITAC charged its Panel on Transforming Government to identify key technical challenges and develop a long-range technology-based strategy to harness the power of advanced information systems to make government's stores of information and vital services easily accessible to and usable by all U.S. Citizens.

While the Panel's findings, in its report, Transforming Access to Government through Information Technology, address the issues from the perspective of public access, they are translatable into equivalent concerns for active intergovernmental dissemination and sharing of government information content. In terms of finding, sharing, and using government information resident in an agency, other government agencies are often no better situated than the public.

The President's Information Technology Advisory Committee (PITAC) Panel on Transforming Government said in its 1999 report that:

"Major technological barriers prevent citizens from easily accessing government information resources... Today government information is often unavailable, inadequate, out of date, and needlessly complicated."

In addition, the Panel noted that:

"[S]tovepiping of both congressional and executive review processes causes stovepiping of plans and programs. The Government Performance Results Act (GPRA), for example, while valuable in requiring agencies to set goals against which they can be held accountable, tends to hinder agency interdependencies in plans and programs because no agency will create a GPRA objective that depends on budgeting and operational success in another agency."

4.K. Sunk Costs of Obsolete Information and Communication Hardware, Software, Systems, and Network Investments

In his comments on the draft report, Terry Ballard, an automation librarian at Qunnipiac College in Hamden, Connecticut, pointed out that the move from CD-ROM, paper, and microform to the Web has come during eight years of economic growth, "but the day is coming when the economy will pack

[65] The nine FOIA exemptions are listed earlier in this report in the section entitled A Working Definition of Public Information.

its bags and head South. Once libraries purchase these products and redesign their work flow to accommodate them, they can't go back to doing things the old way."

Mr. Ballard makes the case for planning and budgetary guidance and policies that take into account the enormous sunk costs involved as a result of the continual replacement of older information and communication technologies with newer ones. Libraries, archives, museums, and records depositories should not be punished for "bad mistakes" in these investments. They must be treated as non-recoverable sunk costs in most cases.

4.L. Lack of uniformly prescribed standards for determining authenticity of official agency electronic information creates mistrust and fosters public disillusionment in utilizing government information

To date, the most common means to guarantee of the authenticity of official government information has been *reliance on source credibility*. Increasing electronic dissemination of information by federal government agencies, however, highlights the need for agencies to take added measures to assure the public that specific electronic information—especially that contained on government websites—has not only been created, validated, and initially provided by the federal government, but to understand which information carries the imprimatur of an official agency promulgation. The growing decentralization of agency electronic information dissemination activities, coupled with the ease of tampering or misrepresenting digital records, are likely to increase the focus on authentication procedures in the near future.

Despite the lack of agency application of sophisticated digital watermarking or authentication technology, public concerns that information provided by government in electronic formats may not be authentic have been kept relatively minimal. The American public continues to rely on a trusted source for such information, e.g. an established agency website. This is well earned trust that should not be betrayed.

The federal government must assume the primary role of assuring authenticity. Several challenges must be overcome, however. Although there are some agencies working on methods to ensure authentication, no standard procedures have as yet been adequately analyzed, tested and translated into sound overall government policy and guidance. A system like Fist Gov does nothing to overcome this inadequacy. Second, government information is produced by so many agencies in all three branches of government that any attempt at consistent application of standards or new technologies to provide a digital watermark or other types of digital rights management controls is almost impossible—not to mention the threat that employing such technologies may likely interfere with unrestricted access to and re-dissemination of government information. Third, technology that would provide some sort of automatic electronic authentication is still in the developmental stages. Applying such technologies would be costly or technologically challenging—both for government and the public.

As we advance further into era of e-government, with its concomitant and significantly increased public need to obtain government information electronically, concerns about what constitutes authentic government information provided federal agencies will also grow. If a technological solution is chosen, the greatest challenge will be to ensure that the public has the means by which to access the information with minimal encumbrance, so that there is no threat to the unfettered flow of government information.

4.M. Central official scientific and technical information policy and oversight executive branch authority never established.

The intent was to establish a coordinated, consistent framework for obtaining STI. This included the establishment of a standard information categorization system known as the COSATI standard—the code for the cataloging of technical information. This "standard" is still used by DTIC, NTIS and some commercial organizations. However, the central authority has never been established.

In 1962 Dr. Jerome Wiesner, Science Advisor to the President, appointed a special task force to examine federal STI programs. The task force made two major organizational recommendations to improve the flow of STI within the federal government. One was a central authority to define the objectives of government information programs; to plan, develop, and guide organization of government information activities; and to develop criteria (including financial) for effective operation of government-wide information system. The second recommendation was that each research and development agency of the federal government should set up an office exercising agency-wide direction and control of information activities."

The then Office of Science and Technology (now the Office of Science and Technology Policy (OSTP)), an agency by law designated to coordinate and provide oversight in the effective management and dissemination of scientific and technical information (STI), assigned a fulltime staff member to information systems and an interagency committee, the Committee on Scientific and Technical Information (COSATI) was established in 1963. The recommendation that each R&D agency establish an organization responsible for management of the Department's STI Program was largely implemented.

COSATI was created to develop among the Executive Agencies a coordinated, but decentralized, STI system for scientists, engineers and other technical professions. Additionally, it sought to foster an improved national system for handling STI and it was made clear that if the blueprint didn't include the private sector there was little chance of an orderly growth of a national information system. COSATI became the national focal point for coordinating the development of a national network of independently operating but at the same time, cooperating STI systems. The key factor responsible for the success of COSATI was its organizational placement in the Executive Office of the President—essentially above the level of the federal agencies themselves. The central authority was not intended to be a central operating activity. The intent was to establish a coordinated, consistent framework for obtaining STI. This included the establishment of a standard information categorization system known as the COSATI standard—the code for the cataloging of technical information. This "standard" is still used by DTIC, NTIS and some commercial organizations. However, the central authority has never been established.

Indeed a dramatic decline began from the high level interest in management and transfer of scientific and technical information that was the hallmark of the 1960's science policy. The result was, by the mid-1970s, the disestablishment of the COSATI and the virtual elimination of OSTP staff associated with STI systems. Beginning about this time and continuing through the mid-1980s leaders of the STI facilities in major R&D agencies met regularly but informally to discuss and, if possible, take action to address problems associated with the cooperative management and transfer of federal STI. These meetings led to the formal establishment of CENDI in 1985. Details of the role of CENDI appear below under Findings Relating to the Federal Government—Interagency Groups.

5. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—INDIVIDUAL FEDERAL AGENCIES WITH OPERATING MISSIONS

5.A. The basic value of agency websites as prime public information dissemination vehicles is unquestioned, but qualified.

> I think it is important to recognize that despite the tremendous potential and, in many cases, compelling advantages of electronic information, the reliable and flexible information infrastructure necessary to support a predominantly electronic Federal Depository Library Program is not yet in place—not in the federal agencies, not in the Internet and supporting networks, not at the libraries, and not with the public at large.
>
> *Dan O'Mahony*
> *Government Documents Librarian, Brown University*

All of the agencies the Commission surveyed in its limited survey designed to try and pinpoint key public information dissemination policy and program issues recognized the value of the web in helping federal agencies to make their information publicly available, but indicated that the government still had a long way to go to create a federal information infrastructure that was fully responsive. The agencies also felt strongly that information paid for by the taxpayers must be accessible within the context of legal restrictions on its release. However, they asserted that a more aggressive program management is needed to ensure that the public receives effective and complete dissemination of, or access to, agency information. One agency suggested that a requirement should be imposed for the creation and maintenance of an authoritative and comprehensive listing of all available information on every agency website. At the same time, many agencies felt that any new requirements imposed should carefully evaluate the impact of workload and staff capacity to meet the workloads or burdensome and unreasonable expectations or deadlines.

> A more aggressive program management is needed to ensure that the public receives effective and complete dissemination of, or access to, agency information.

Dan O'Mahony, Brown University government documents librarian, in his testimony before the Senate Committee on Rules and Administration on "Public Access to government Information in the 21st Century," held May 22, 1996, said:

> I think it is important to recognize that despite the tremendous potential and, in many cases, compelling advantages of electronic information, the reliable and flexible information infrastructure necessary to support a predominantly electronic Federal Depository Library Program is not yet in place—not in the federal agencies, not in the Internet and supporting networks, not at the libraries, and not with the public at large.[66]

5.B. Additional steps to strengthen existing government-wide policy and procedural guidance need to be taken by the legislative, executive, and judicial branches.

Several agencies suggested that additional guidance on implementation of the e-FOIA from the Department of Justice is needed. Also, from the Office of Management and Budget, strengthened guidance is needed on the Privacy Act as well. The reauthorization of the Paperwork Reduction Act in 2001 offers yet a third opportunity to improve government-wide policy leadership and guidance. In

[66] [Insert citation]

addition, better guidance is needed from government central oversight agencies on web posting and content management (which is dealt with in the following section).

Current legislative and executive mandates were initiated largely for a paper-based world, but a great deal of agency information is either:

- not available as an electronic version;
- nor are there any plans to ever make the information available in electronic form, for many reasons including: there are simply too many graphics and visual materials to make digitizing a cost-effective alternative; there are simply too many scientific and technical data attachments; the material is simply too old to be able to decipher the document because the physical substrate medium is beyond "refreshing"; and many other reasons;
- is incomplete;
- is inaccurate;
- is untimely because it is outdated;
- is not officially recognizable (authenticatable) as being a "certified, true copy" by the agency;
- is unreliable (e.g. the content is replaced or overwritten without notice); or
- far more difficult to use in electronic form than the paper or pre-electronic forms ever were, because of the vagaries of specialized formats or mediums, or proprietary software requirements.

Then there are problems with privacy and security mandates. At least one agency in the Commission's special survey of agency practices sees the need to review existing requirements with the objective of strengthening the government's ability to address security and privacy concerns associated with the aggregation of unclassified information made possible and increasingly easy to handle and access by electronic means such as the World Wide Web.
Another agency surveyed suggested that federal libraries should be mandated to disseminate agency information and copies of everything printed (or issued electronically) should be forwarded to the library for cataloging for later retrieval. In some instances, issues/restrictions imposed on delivery of information on the web involved security considerations. Security, in particular, is in many cases overriding issues of public access and the free flow of information. Another challenge relates to the "dot.com" links, which the public does not always understand are not agency endorsements of a particular set of information, but have been selected to meet specific agency needs. Libraries need to be able to apply their criteria for collection building to commercial and other sources. Technology should enhance libraries in their ability to disseminate information, not be an end to itself or place undue restrictions on what libraries do and do well in delivering content, selectivity and quality.

The survey of agencies conduct as part of this assessment leads the Commission to conclude that NARA should establish policies and standards for archiving. Responding agencies said that NARA should be directed to receive CD-ROM, as well as files electronically transmitted to them, or they should designate the PDF or another file format as acceptable to them. Requiring 62,050 bpi tape, no extraneous characters, and 7-digit block factor is simply not acceptable in today's environment.[67]

5.C. Many agencies have established standing public information dissemination policies and programs, but there are wide differences among them, and they could and should be standardized to a greater degree without sacrificing individual agency differences or stifling agency initiative.

[67] The survey results are available in Appendix 26 and at http://www.nclis.gov/govt/assess/nclismsg.html.

As noted above, the Commission surveyed a dozen or so federal agencies as a part of this study, asking them about their public information policies, programs, and practices.[68] Their responses were quite "upbeat."

Within the last five years, significant strides have been made in the dissemination of government information in electronic format. Agencies are convinced of the advantages both for accessibility and availability and the resultant economic, effectiveness, and efficiency gains, as well as programmatic gains. Information provided to the public is more timely when in electronic format, and the posting of rules and regulations requiring public comment provide a quick and easy means of transmitting comments within the review period. Filing of information required for permits, licenses, and the like, can often be done electronically and, in fact, will be required under the Government Paperwork Elimination Act (GPEA). Those wishing to acquire information on a specific subject can search the catalogs of publications (printed and electronic) posted on the website, be told where to obtain the information, and in many instances request the information through e-mail to the site.

All agency survey respondents reported having websites at the departmental and lower unit levels. The Administrative Office of the U.S. Courts' Office of Public Affairs manages the AO website. The department/agency sites include policies and procedures, press releases, fact sheets, listings, and indexes of publications, and in some instances the full text of a publication, statistical, and other data sets. Respondents for the Departments of Labor and Treasury, and the U.S. Geological Survey specifically mentioned the requirement for appropriate review and clearance of information being placed on the web. Most respondents indicated the existence of policies and procedures for the web, although only the Indian Health Services, the Departments of Defense and Treasury, and the AO indicated coverage for adding, changing, and deleting information.[69]

The Electronic Freedom of Information Act (e-FOIA) appears to have impacted agencies heavily, in that several agencies reported indexes and search capabilities for use by the public in FOIA Reading Rooms. The Indian Health Services and the Department of Veterans Affairs refer to their e-FOIA Reading Rooms, though they do not specifically refer to the e-FOIA itself.

Only the Department of Defense and the Smithsonian Institution report a comprehensive listing of electronically published information. In DoD information is included in the DoD Resource Locator. In other departments, the divisions, bureaus, and small organizational units maintain listings of their publications (print and electronic) on the web.

5.D. There are many success stories in interagency sharing of government information.

Despite the many statutory and policy barriers to interagency sharing, the Commission found many success stories for which the agencies must be given a good deal of credit. Here are just a few, and additional examples appear in Panel Two's Final Report.[70]

The National Biological Information Infrastructure (NBII) is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry. Resource managers, scientists, educators, and the general public

[68] Ibid.
[69] Ibid.
[70] The final report from Panel 2 is available in Appendix 18 and at http://www.nclis.gov/govt/assess/panel2.html.

use the NBII to answer a wide range of questions related to the management, use, or conservation of this nation's biological resources.

Gray literature is foreign or domestic open source material that usually is available through specialized channels and may not enter normal channels or systems of publication, distribution, bibliographic control, or acquisition by booksellers or subscription agents. The GrayLIT Network makes the gray literature of U.S. federal agencies easily accessible over the Internet. It taps into the search engines of distributed gray literature collections, enabling the user to find information without first having to know the sponsoring agency. The GrayLIT Network is a comprehensive portal to federal gray literature. By offering a mode of communication for this hard-to-find class of literature, the GrayLIT Network enables convenient access by the American public to government information.

The Department of Energy (DOE) provides public access to this research tool through GPO Access in partnership with the Government Printing Office. Federal agencies participating in this project are DOD/DTIC, DOE, EPA, and NASA. Participation will be expanding as the site develops.

A new program area at Commerce assumed responsibility for bringing the Commerce Business Daily (CBD) into the 21st century. They solicited proposals from organizations to fulfill their vision of a new, electronic CBD that would serve the needs of the government procurement community and American business in the information age. The result was a partnership with the Government Printing Office to produce CBDNet. This popular database is available free to the public on the GPO Access system.

The Commission is delighted to acknowledge that even as it was preparing this report for publication, a brand new *Guide to Federal Publishing* reached its desks. This new publication reflects the ideas and participation of the Interagency Council on Printing and Publications, the Federal Publishers Committee, the Government Printing Office, this Commission, the Consumer Information Center, NTIS, and the federal Webmasters Forum. It is a significant updating of prior guidance, taking into account the Web and Internet publishing.

5.E. Statistical indicators of interagency information sharing show positive results.

There are indicators that there is demand for government information both from inside government as well as outside. Namely, there is a demand from one federal organization for information generated by another government organization. For example,

- NTIS is an access point for federal Scientific and Technical Information (STI). Annually NTIS disseminates:[71]

Paper Reports	75,000
Microfiche/SRIM	750,000
Subscriptions	175,000
Best Selling Books	75,000
Computer Products	20,000
Audiovisuals	7,000
Online/Distributions	Millions

- DTIC is an access point for the Defense Department, Defense contractors and grant recipients. In FY 1999 DTIC provided nearly 53,000 unclassified non-digital documents to 30 federal

[71] NTIS does not separately report government and non-government use; however, it is reasonable to assume that a significant percentage of NTIS use is by government organizations.

government organizations in the Executive and Legislative branches. While 45% of these documents went to NTIS and the Library of Congress for their collections serving both the Public and Private sectors, 55% went to federal agencies to meet local needs. In addition to these "physical" documents 2,410 digital documents were provided to other federal agencies. Delivery of digital documents will continue to grow, as more documents are made available electronically.

- GPO is a public access point. During a recent 11-day period, GPO extracted the number of .gov and .mil addresses (excluding state and municipal .gov sites) referring users to GPO Access and the number of referrals and compared them to overall addresses referring and the total number of referrals. Some 635 distinct URLs referred users to the resources of GPO Access. This was 12 percent of the total. In all 32,185 referrals were received from these federal government addresses, *or a little more than 23 percent.*

5.F. Technical information handling standards and protocols are needed.

With respect to technical information handling standards and protocols, a recent OMB survey of agency e-Gov plans indicated that:

- Agencies agreed that common standards would be useful, especially in the XML area. However, agencies generally opposed mandating a common XML or "GXML" standard by statute because this would be slow and overly prescriptive. Furthermore, they contended that it has not been demonstrated that government information is so significantly different that a separate language (GXML) is needed;
- In general agencies did not believe that new statutory direction is needed in the area of interoperability standards. A strong administrative effort, they contended, would yield the benefits of common standards in terms of interoperability while minimizing prescriptiveness. Agencies also noted that OMB policy requires relying on private sector standards wherever possible; and
- In the authentication arena, agencies strongly favored an interoperable public key infrastructure (PKI) through which multiple agencies could rely on a single digital signature. A federal PKI Steering Committee is studying the "Bridge" as a means for accomplishing this objective.

5.G. Agency policy guidance on public information resources availability, management, and dissemination is spotty, but with some notable exceptions.

The Commission found that agency policy and procedural guidance laying out clearly what the agency's policies are for planning and managing its public information resources, making its information easily and cost-effectively available, findable, and accessible by the public is spotty with a few notable exceptions. One notable exception is the guidance laid out in Chapter 21 of the EPA IRM Policy Manual, entitled "Policy on public access to EPA information." This document clearly establishes:

- Purpose;
- Scope and applicability;
- Background;
- Authorities and references;
- Policies (discussed below);
- Responsibilities;
- Definitions

Here are the EPA public information resources policies:

- The Agency shall ensure that all information products created electronically be inventoried, stored, retrieved and, if appropriate, disseminated electronically. Agency contract agreements, grants, and interagency agreements shall require that deliverables be submitted in both paper and electronic format;
- The Agency shall provide an array of information products and services targeted to the customer and determined to be cost-effective. These services may include simplified, integrated entry points for information seekers, such as information telephone service and a single Internet address connecting to all EPA-provided information;
- All new and enhanced data systems, data collections, and databases shall be designed with consideration of the need to permit and facilitate public access to that information;
- The Agency shall provide, where available, information on the uses and limits of each data product released to the public. The information provided may describe the Agency's purpose for collecting the data, the source of the data, the known quality of the data, the Agency's application of the data, and limitations or cautions in using the data. The Agency may issue a disclaimer against using the data for other than the purpose intended, because there is a high risk of misinterpretation of the information;
- The Agency shall encourage and facilitate the integration of data and the exchange of information across EPA programs and with federal and state agencies to conserve resources and to improve the usefulness of the information to the public;
- The Agency shall adhere to its written, Universal Customer Service Standards, and in particular to the EPA Customer Service Standards for Public Access; and
- The Agency should consider, to the extent resources allow, ways to overcome barriers many citizens face in obtaining information, such as lack of Internet access, language, and physical disability (hearing and sight, especially).

If the CIO Council establishes a "best practices" portfolio for model agency public information resources policy statements, in the Commission's view the EPA Chapter 21 material should certainly be included. There are other, very worthy examples as well that the Commission discovered as a result of its agency survey.

5.H. Retention periods on agency websites are inadequate for much research and general public needs including genealogical research.

Certainly, specific Commerce publications, as cited in the Commerce Fact Sheet in August of 1999 are available on the Commerce website. (The Commerce Fact Sheet cites two high profile policy studies as examples), but how long will they be maintained on the Department's website and how about the many less prominent Department studies not on the website?[72]

[72] Here is an example of the effort that an experienced searcher made to find the two documents mentioned (but not cited by their Internet addresses) in the Fact Sheet. On November 26, 2000, an NCLIS staff member went to the Department of Commerce website (www.doc.gov) to determine the current availability of the reports referenced in the Fact Sheet. The document entitled Emerging Digital Economy II could not be found searching the site; however a search of the GPO *Catalog of U.S. Government Publications* (http://www.access.gpo.gov/su_docs/locators/cgp/index.html) quickly located the document at http://www.ecommerce.gov/ede/report.html. A subsequent search of the National Telecommunications and Information Administration website (www.ntia.doc.gov) retrieved a slide presentation about the report that included the correct Internet address. A similar search for the other report referenced in the Fact Sheet, the first annual report of the U.S. Government working group on electronic commerce, found a link to the second annual report (http://www.ecommerce.gov/annrpt.htm),

The two Commerce publications cited in the example above were published in late 1998 and 1999 and Commerce has them on their website for public access. How about older publications, say those pre-dating 1996 and the use of the Web for public access of government documents? Most of these are not available in electronic form for Web mounting. Does Commerce intend to invest millions of dollars in converting these older documents to Web-ready form? Does Commerce expect other agencies to do so? At whose expense and with what funds? Note that 36% of NTIS' report titles sold in 1998 was over 10 years old. Agency-based Web servers cannot meet this demand unless substantial investment in backfile conversion is made. Should we simply assume that anything not in Web-ready form that was previously published is of no value to the public and no longer requires public access? Clearly this is not the case.

5.I. Sometimes unpopular agency policy positions disappear quickly from their websites, or never appear at all.

How about those studies paid for with taxpayer funds whose results do not support the Department's policy positions? Will they be featured on the Department's website? Will even the most sophisticated search engines locate them? The Freedom of Information Act (FOIA) and e-FOIA will remain necessary tools for public oversight of government activities, and strengthened rules for transfer of all appropriate agency information products to a central facility will help to safeguard current and future access to government information. However, central information organizations are merely stewards for the information entrusted to them. The current laws requiring transfer of information products to NTIS and GPO lack the means to ensure agency compliance. There is a need for enforcement mechanisms with real consequences.

5.J. Serving populations that are not directly associated with operating agency missions is secondary insofar as the agency is concerned, but the central mission agencies must address the needs of the general public.

Agency websites are intended to provide agency information (and perhaps external information related to the agency mission) to the agency's constituency in support of the agency's mission. That may not be consistent with providing government information to those members of the general public not specifically associated with the agency mission. For example, the Defense Department is responsible for providing access to its extensive collection of research reports to its internal scientists and engineers and its large contractor community. How much effort should DOD expend to insure that non-defense related users have adequate access to this information and how concerned should the Defense Appropriation Committees be with this? Will a website designed to meet the needs of the Defense community always meet the needs of a non-defense related university researcher or small businessman? Should it? The fundamental mission of providing access to government information to avoid duplication of research effort and to promote economic growth—a mission that might at one time have been thought to be a part of the Department of Commerce—gets lost in the specific missions of the various agencies and their websites.

5.K. The critical distinction is oftentimes not made between a "passive dissemination" agency posture and a "proactive dissemination" agency posture.

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but there were no links to the first annual report on the GPO, Commerce or NTIA or websites. A search of the www.ecommerce.gov website also located only the second annual report. The site map for www.commerce.gov does not include a link to the www.ecommerce.gov website, although there is a link labeled "E-Commerce Initiative" elsewhere on the main page. Apparently the www.ecommerce.gov website is not included in the search of the www.commerce.gov website.

Having Defense (as well as other mission agencies) make its (their) technical information available to the general public as a near-free by-product of meeting its mission needs is worthwhile and should be encouraged. It is not, however, sufficient to fulfill the government's responsibility to make government information available to the public. There needs to be a clear focus on public information dissemination, which is not likely to be present (all the time) in the mission agencies. That is the role for NTIS.[73]

5.L. The need for safety net remains, no matter how much information is posted to agency websites.

There also needs to be a back-up system, a safety net or failsafe mechanism, to insure that what the mission agency does not disseminate or does not mount on its website, or takes down or does not properly process for public access is still accessible to the public. That is the role that the National Technical Information Service (NTIS) serves for scientific and technical information (STI) and that the Government Printing Office (GPO) serves through its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP). Both agencies are well aware that they fall short of comprehensive coverage, in spite of statutory mandates for agency submission of information and their own best efforts to obtain information from the agencies.[74] Clearly a central information service needs to take advantage of each mission agency's efforts to distribute the agency's information to minimize duplicative costs, but it also must be prepared to step in and provide access when the mission agency does not. That is currently the role for NTIS and GPO, and if the Commissions recommendations are accepted, will be the role for the proposed Public Information Resources Administration (PIRA).[75]

Some of the shortcomings identified in this section can and probably will be overcome in time. Once standards are set and adhered to some of these access problems will disappear. As the technology improves more of these problems will disappear. Ye*t today, with the current state of the Internet, standards and technology, public access to agency publications via agency websites is very much a hit or miss proposition*. Once again, there is a need for a back-up mechanism, a safety net or failsafe mechanism, to insure that the public has access to the mission agency reports and publications. That is currently the role for NTIS and GPO, and if the Commissions recommendations are accepted, will be the role for the proposed Public Information Resources Administration (PIRA).

5.M. Older format and medium conversions are not systematically and regularly taking place; preservation of materials to protect against technological obsolescence is not high priority.

As mentioned above, there is the rather significant matter of providing access to the tens of thousands of valuable reports and publications that are not in Web-ready form. These require either expensive

[73] These terms are defined and discussed earlier in the report in the section entitled What This Report Is About and What It Is Not About. The issue is also discussed in Finding 1.A.

[74] As noted in Finding 3.A, in spite of the efforts of the federal STI organizations, NTIS estimates that approximately 25% of reports that should be submitted to them under the American Technology Preeminence Act are not submitted, and are therefore not available for current and future use. While no precise numbers are available, the Government Printing Office also estimates that there are a significant number of "fugitive documents" that come under the statutory mandate for inclusion in its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP), but are never provided to GPO for dissemination.

[75] It should be noted that a significant part of the information available through NTIS comes from DOD, DOE and NASA, which provide just such a safety net for the information products of their own agencies through their STI programs. Many other publishing agencies lack this additional safety net.

conversion to Web-ready form or old-technology reproduction and represent at least one half of the total current NTIS demand. Clearly, there is a role here for NTIS.

5.N. Need for specialized searching and locator tools requires substantial new knowledge and research.

In addition to mounting the full text of some of their reports on their websites and thereby providing some public access, the mission agencies may also provide some finding tools to identify reports sought by users. These tools might include some indexing, abstracting and cataloging of the reports and publications, or they might not, as is the case with the two Commerce Department examples. The tools might include a search engine on the website to locate reports or the site might rely upon users accessing commercial Web search engines to locate reports on the site. The search engines will work for some reports but not for others. Where reports and publications are stored in PDF image form without a full text search capability neither the search engine on the site or the commercial search engine will find the document. Where the agency chooses—for more efficient searching of its material—to store its reports and publications in a separate searchable database on its website, an external search engine will not be able to search the contents of the database and the reports will not be found.

5.O. Permanent public availability of, and access to, government information are critical parts of the overall strategy to meet the government information needs of the public, and they must be strengthened.

"Permanent Accessibility," much less "Permanent Public Availability of, and Access to," are confusing and imprecise terms in the context of government information. Moreover, a closely related but different term "Permanent Access to Federal Records" is provided for under the Federal Records Act but many agency publications and other important documents are not permanent federal records (and hence not permanently accessible) unless individual agencies take action to make them so. Many agencies do not schedule all of their publications and important documents as permanent records, nor do they have policies to ensure their permanent public availability and accessibility whether they are official agency records or not.

Depository libraries provide a safety net of last resort for the purpose of permanent access to government information, but NTIS reports are not generally distributed to depository libraries and, in any event, to the extent that depository libraries acquire them outside of the Federal Depository Library Program (FDLP), they are not required to maintain them permanently. Whatever the problems with permanent accessibility may have been in pre-Internet days—and there were many—they have been compounded with the extensive federal agency uses of the Internet to publish and disseminate information.

Government information to which the public should have access, particularly the results of research work that are likely to have long term value beyond the purpose of the original research, should be permanently availably to and accessible by the public. Public access should not end when the agency sponsoring the research decides—possibly for budgetary reasons—that the report will no longer be made available on the agency's website. For example, the research reports on energy conservation and alternative energy sources from the early 1970's are suddenly very relevant again today. Are they still up on DOE and Transportation Web servers? NTIS should be the fallback source to make these

research results available when it is no longer available from the generating agency.[76] In the Internet age, where agencies mount some of their information on their own servers and make it available to the public free of charge, NTIS processing should provide pointers to the information on the agency's website. When the information is removed from the original agency's website NTIS should provide access to the full text of the information on its own website or by some other means.[77] In the case of older, less frequently accessed, information, the public requester will have to purchase a print or microfiche copy of the report from the NTIS archive copy or have a digital copy created through scanning. However, once the first person purchases a retrospective report and pays for its digital conversion as part of the purchase price, it should then be on the free website.

Since there is no assurance in the present highly volatile technological environment that we will be able to use government information electronic files 10 or 20 years in the future, there should be a policy that central information service organizations such as the Government Printing Office ride agency orders for tangible products (primarily print) for at least the 53 regional depository libraries, the National Archives and records Administration (NARA), and the Library of Congress. Distribution of the paper copies provides a safety net assuring permanent public availability and access to the material. The GPO has traditionally held to the view that if a publishing agency deemed a product sufficiently important to print (paper) copies, GPO should put paper copies in the depository library program at least for the 53 regional libraries.

But what about electronic products?

Finally, "Permanent Public *Availability" (*or more accurately and precisely Availability and Accessibility*)* seems a preferable term to Permanent Public *Accessibility* since the emphasis is on maximizing the information government should make available to the public. *What good does it do to ensure permanent accessibility if the information is not available to the public in the first place because they are not entitled to it because disclosure is statutorily prohibited*?

5.P. The Federal Depository Library Program has a permanent mission, but also a critical need for new vision and updated service model.

> The Commission strongly believes that there is, and will continue to be, a substantial need for a distributed network of libraries nationwide with a commitment to assist the public with the identification, search, retrieval and use of public information resources.

The Federal Depository Library Program (FDLP) is a strategic element of the Nation's information infrastructure, *but is in dire need of a new vision and a new service model appropriate to the Internet Age*. John Q. Citizen can communicate just as easily and directly, or more easily and directly, with a federal agency website, access a remote library's electronic catalog, or even access a foreign archive or museum, than he or she can walk to, or telephone or fax the nearest library in his own home town. Moreover, the word "depository" means to deposit *something*, meaning to physically take it from one

[76] To the extent that this information also falls under the statutory mandate of the FDLP, and much of it does, the federal depository libraries should also receive it. Some of this information already flows through GPO to the depository libraries; however, many agencies are unaware of this responsibility or falsely assume that by placing the information in NTIS it reaches the depository libraries. The recommendation to combine NTIS and the GPO Superintendent of Documents responsibilities in a new Public Information Resources Administration (PIRA) will help to close the gap in both the NTIS and the FDLP safety nets. This is included in Recommendation 5. The text of the proposed legislation is in Appendix 21.

[77] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

place and put it in another place, but eventually there will be few tangible information products[78] left to "deposit" once government information is almost entirely in electronic digital form. In short, the term "deposit " is becoming less and less appropriate as the key operative word to describe this program, although the program itself will remain a critical and strategic resource. The challenge, however, is that *we are a long way from that Utopian state of affairs*. In the meantime, it is imperative that the many interim steps necessary to effect that transition be identified and scheduled in the short-term, in the mid-range period, and in the long-term.[79]

The FDLP has long played an important role in providing public access to government information. The system, based initially on low cost override printing by the Superintendent of Documents, later augmented by microfiche distribution and now moving rapidly to the Internet, provides broad public access at no cost to the public user. Most NTIS reports do not make it into the FDLP since they are not printed by or through the Government Printing Office.[80] Agencies are required by 44 U.S.C. 1903 to provide copies of their publications to GPO for the FDLP when those publications are not printed at, or procured through, GPO; however, many agencies are unaware of this responsibility or falsely assume that by placing the information in NTIS it reaches the depository libraries. This has been a longstanding source of disagreement between GPO, NTIS and the report originating agencies. There is some limited purchasing of NTIS microfiche by a handful of depository libraries and a new pilot program between NTIS and GPO to provide some libraries with access to NTIS material on the Web in image form. However, generally the depository libraries do not have ready access to NTIS reports. The future availability of NTIS reports without charge on the Web should solve this problem since depository libraries serve their users through Web access. No fee public access through federal depository libraries is one more reason for making sure as many NTIS reports as possible are available without charge on the Web. When NTIS reports are available without charge to federal depository libraries, GPO will recognize the reports as officially coming under the auspices of the FDLP, as many publications on agency websites already are, and no-fee public access to NTIS reports through the FDLP will be assured.

Commenting on the draft report and the proposed legislation, Professor Charles A. Seavey of the School of Information Resources and Library Science at the University of Arizona said, "One of the inevitable consequences of the move towards a more electronic dissemination system is that every library is essentially a depository library. Somewhere along the line Congress, and/or the [Public Information Resources Administration (PIRA)] has to figure out a role for the existing FDLP libraries. There is a huge pool of expertise in those libraries, yet if the intent of Congress is to move towards purely electronic dissemination, what is the point of a paper-based FDLP?" The Commission strongly believes that there is, and will continue to be, a substantial need for a distributed network of libraries nationwide with a commitment to assist the public with the identification, search, retrieval and use of public information resources.

These libraries maintain integrated collections of government information in many formats and media (paper, microfiche, and digital). More importantly, they have highly trained professional staff who

[78] Tangible information products include any information that can be physical transferred, e.g., a paper publication, a paper map, a poster, a document on microfiche, a CD-ROM, or a video tape.

[79] GPO and the federal depository libraries have been working on this transition the first CD-ROM titles came into the program in 1990. A formal transition plan was developed in 1996 in conjunction with a report to the Congress entitled *Study to Identify Measures Necessary for a Successful Transition to a More Electronic Federal Depository Library Program (*http://www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html) and that effort has accelerated each year. This statement is not intended as a criticism of what has already been accomplished, but rather in recognition that there is much more to be done.

[80] Most paper publications get into the FDLP because Superintendent of Documents has the opportunity to "ride" the agency printing requisition to purchase copies for the program.

understand the information content and formats and can assist users to identify, locate and use government information.

5.Q. Reorganization of government public information resources management authorities, missions, functions, programs, policies, and resources is essential.

The Superintendent of Documents was established within the Government Printing Office at a time when all government publishing was done in print form and the Congress did nearly all printing for the entire government. Times have changed. As Executive Branch publishing and information dissemination has increased dramatically the issue of separation of powers has intensified with the Congress doing much printing and distribution to enable Executive Branch agencies to carry out their missions. The advent of information technology and the Internet/Web have further exacerbated this issue and made it virtually impossible and impractical to effectively manage Executive Branch information activities from a Legislative Branch office.

There has always been a tension between NTIS and SUDOCS. In recent years this tension has gotten more intense as NTIS has sought to achieve or retain profitability in difficult financial circumstances. Both agencies have similar problems with congressional appropriations committees that seek to cut appropriations for their "public good" functions, mistakenly believing either that the costs can be recovered entirely from sales or that, with the Internet, there are no costs. Both agencies will have to streamline their operations for the Internet and make the case to Congress that their "public good" functions should be properly funded with appropriated funds.

Other issues between the two agencies include differences in bibliographic control and the fact that most NTIS documents do not make it into the depository libraries. As long as the two agencies exist as separate entities the elusive goal of "one stop shopping" for government information will continue to be that much harder to achieve.

Combining NTIS and SUDOCS into a single organization is an appealing notion. It would provide the means to eliminate the tension and competition between the two organizations, make it easier to standardize cataloging and bibliographic processes, consolidate databases and searching tools, and begin a serious move to simpler, unified public access to government information. There will also be significant opportunities for cost savings by elimination of duplication of effort. Particularly with both agencies moving rapidly toward Web based distribution of much of their information; the notion of a consolidation is attractive.

Several of the study panels addressed the idea of merging the two organizations, and concluded that the disadvantages would be primarily political. For example, could such a merger be made to happen when either the Executive or the Legislative Branch would lose a major central information distribution component to the other?

Strong arguments can be made for having the combined agency in the Executive Branch because of the increasing interaction with the Executive agencies, the decreasing involvement with print product, and the fact that information dissemination is inherently an executive rather than a legislative function.

However, the likelihood of the Congress approving a shift of the Superintendent of Documents to the Executive Branch seemed so remote to many of the panel members that they were very reluctant to even want to propose it.

One panel discussed an even broader reorganization proposal that would consolidate even more of the existing government information activities from various agencies than just NTIS and SUDOCS. Such a consolidation involving not only NTIS and SUDOCS but also related functions from NARA, LC, OMB and GSA was believed to have merit, but admittedly would be far more difficult politically to achieve than just a merger of NTIS and SUDOCS. However the Commission, taking into account the views of many other experts and groups on the matter, is prepared to raise the matter.

6. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—CENTRAL AGENCIES WITH GOVERNMENT-WIDE INFORMATION SERVICES AND INFORMATION MANAGEMENT MISSIONS (EXCEPT NTIS)

6.A. Central agency(s) government-wide information services and information management roles still crucial; overall policy leadership and oversight unfulfilled.

> The individual agencies believe, incorrectly, that it is less important to provide the documents to the central information service organization since the public can get it from the agency (or bureau or division) website, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.

As mentioned early in this report, central information service agencies within the government such as NTIS and the Superintendent of Documents Federal Depository Library Program and Sales Program, as well as the sales programs of the Census Bureau, the U.S. Geological Service, and many others, all have made their mark by providing a convenient central service to their constituent agencies, and to their ultimate service beneficiaries—notably, the public. These services to federal agencies have had the virtue of eliminating some of the agency burdens of distributing information products to agency users.

Admittedly, now with electronic documents and the Web, agencies can perform many of the same functions themselves without significant cost and efforts, so their support for the government-wide information services provided by NTIS, the Superintendent of Documents, and others, has begun to diminish. The individual agencies believe, incorrectly, that it is less important to provide the documents to the central information service organization since the public can get it from the agency (or bureau or division) website, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.

When agencies, bureaus or divisions that do not have the primary mission of information dissemination go into the information dissemination business, they do so with a different orientation and different motives than those of the central information services. The central information services ensure easy access to all segments of the public for all of the information products on a permanent basis.

The mission oriented agencies, however, are more likely to provide ready access to only those documents that further the agency's mission, and only for as long as they further the agency's mission,[81] and only to those particular users and user groups in whom the agency's management is

[81] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA), do consider access to relevant research and development part of their mission, but have traditionally focused most of the efforts on service to the agency personnel, contractors and grant recipients. Recently the Department of Energy and the Defense Technical Information Center (DTIC) have begun to offer access to the general public through their websites.

most interested. Moreover, when agencies stray too far from their legislatively mandated and authorized missions, Congress chastises them for doing things that they are not supposed to do with their appropriated funds.

Thus, the principles of public access are not achieved uniformly through all of the agency information systems, and no one knows which of the thousands of systems is missing what particular information products. There is therefore no assurance that the government is providing full public access to what should be public information. There is also no assurance on what that information is, or where it is. Instead, proper public information dissemination depends on the judgment of thousands of unmonitored officials at all levels in thousands of lower level units of government.

There is a critical need for overall policy leadership and oversight in the area of public information resources management. While some have argued that the Congress intended that OMB's Office of Information and Regulatory Affairs should have that role, they have not fulfilled that mandate for a wide variety of reasons. Perhaps the main reason is that the migration of information from pre-electronic to electronic formats and mediums has been so rapid, so dramatic, and so pervasive and far-reaching, that OIRA simply has not been able to cope with the need for *detailed* policy leadership and operational guidance. The Commission is convinced that OIRA will not be able to fulfill that detailed role in the future, and therefore new solutions are needed. If and when OIRA is relieved of the burden of keeping up with detailed guidance, hopefully it will be able to revert to its statutory role of general oversight guidance.

6.B. Central information services and information management agencies have an even more critical role in the Internet age than they did in the pre-Internet age.

There are some who believe the Web signifies a world of completely dispersed, decentralized, and distributed missions and functions that require virtually no coordination or controls. The Commission strongly disagrees with this viewpoint and holds to the view that, for a wide variety of reasons, central information services and information management missions and functions are even more critical in the Internet Age than they were in the pre-Internet Age.

The general reason is to ensure overall policy leadership and oversight of public information resources management. Some specific reasons are:

- Concerted and centralized acquisitions of mission agency information products to ensure that government-wide collections of information (such as STI information collected by NTIS) are complete and the public does not have to confront a bewildering array of different websites. *It should be remembered that even if powerful new search engines such as the one contained in FirstGov eventually succeed in enabling cross-agency searching, the user still would be confronted with a bewildering array of websites once the search was completed, from which s/he would have to obtain the information; and even then there would be no guarantee that all of the information needed was identified;*
- Permanent public availability and accessibility policies are more likely to be followed and applied in a uniform fashion than if each agency were left to its own policies;
- Concerted and closer attention can be paid to authentication of the official version of a public information product, and the minimization of the proliferation of unofficial, unauthenticated versions;

- Single, central, authoritative sources of the major collections of government information products and services for the public would greatly simplify the initial locator, search, retrieval, access, and delivery of the information;
- Cost effectiveness determinations to consider fully the trade-offs between the relative benefits and values on the one hand, and the costs and burdens on the other hand, of alternative information formats, mediums, and other publishing considerations;
- A standard cataloging and indexing system appropriate for the majority of public users would be followed by all agencies, or provided by the central information dissemination agency, to simplify and streamline the process of identifying public information products when they are brought into the system;[82]
- The availability of many products which are not in electronic form, both "current" and "old," could be much more easily assured;
- The availability of products in non-electronic form for those users unable to use Web-based information because they are insufficiently computer literate, information literate, or do not have convenient and easy access to a public information resources facilities such as a library, could be more easily ensured;
- Assurance, in most cases, that products will make it into depository library system albeit under a changed set of guidelines as described elsewhere in this report; and
- A single, authoritative focal point for private sector information vendors to negotiate value-added services for government information products for the public would be a better approach than the alternative.

6.C. Government-wide information service business models must be revised.

Government-wide information service roles and activities are usually legislatively mandated to be self-supporting. Document sales income is often used not only to pay the costs of actually providing the ordered document, but of running the central service and processing the new documents into the central system.

This posture made some sense when the central service was the primary source for the agency information, and when its sales income could support the central service. Now, however, with agency documents being made available for free on the Web, the bottom is cut out from under the central sales services, and they are destined to fail financially.

Continuation of present funding policies based on the pre-Internet environment will result in the elimination of all of the central information services as one after the other fails to achieve the level of sales income necessary to sustain its operations. NTIS just happened to be the "tip of the iceberg" that first popped into the public spotlight.

Does this mean the central services should be closed down, as the Department of Commerce suggested in 1999 in its proposal regarding NTIS? If the public can get free access to agency documents from agency websites at minimal cost to the government and the user, why do we have to continue to fund the pre-Internet central services? Do the central services provide any value that is not obtained by the

[82] Such a service is currently provided by the *Catalog of U.S. Government Publications* produced by the Government Printing Office *(www.access.gpo.gov/su_docs/locators/cgp/index.html)*. A standard cataloging and indexing systems would augment, but not necessarily replace, the specialized controlled vocabulary indexing developed for the primary community of users in specific disciplines, such as the National Library of Medicine Medical Subject Headings (MeSH).

mounting of documents for public access on agency, bureau, or division websites? Isn't any document of consequence likely to be mounted on one or another of the thousands of government websites, where it can probably be found by one search engine or another, even though the finding process may be long, complicated, and costly?

In its recent e-Gov survey of agencies, OMB indicated that moving to an entirely electronic or "virtual" model was not a good idea. They indicated, "online scientific and technical information" (for example, in the case of NTIS) "must be carefully scrubbed to protect privacy and provide adequate security for sensitive data." Agencies also "noted the tension between relying on agencies to make information available as opposed to having the information retained in a central repository. These agencies argued that it would be best if these questions (as well as cost and access issues) were resolved before legislating a solution." Several agencies suggested a virtual STI database, but reaffirmed the need for an NTIS role in providing this centralized function.

The Commission is not the only body to come to the conclusion that "front-end" information preparation tasks must be undertaken by any agency which is preparing information products for the public (not just NTIS). For example, the Computer and Communications Industry Association (CCIA) commissioned three distinguished economists, all of whom had held key positions in the Clinton Administration, to study the Role of the Government in the Digital Age. Their report, dated October 2000.

The authors first established three sets of "Principles for Government Action" which they designated as "green," "yellow," and "red." Green principles are those that they asserted the government should undertake with little concern; yellow those that the government should undertake with caution; and red those that the government should generally not undertake.[83] Three red light principles were identified. Principle 11 says "The government (including governmental corporations) should generally not aim to maximize net revenues or take action that would reduce competition." Then on page 118 of their report, they say:

> Principle 11 raises serious questions about whether NTIS should be a "self sustaining" agency. The core clearinghouse function of NTIS, which entails the collection and dissemination of government scientific, technical, and engineering information, is certainly a proper government role (see Principle 1). But based on the principles described above, it would be more appropriate for the Congress to appropriate funds for this public good function than to require that NTIS offset losses in the clearinghouse with other business lines.

6.D. Central agencies with government-wide information services and information management missions are nevertheless sometimes needlessly overlapping, duplicative, and wasteful of resources and sometimes also promulgate conflicting and inconsistent policies and guidelines; the information life cycle approach must be utilized.

While the Commission strongly supports the need for continuing central, government-wide information services for the reasons outlined above, nevertheless, the Commission found that the mission, functions, and activities of the existing central mission agencies are sometimes needlessly

[83] Stiglitz; Joseph E., Peter R. Orszag, and Jonathan M. Orszag, "The Role of Government in a Digital Age." Commissioned by the Computer & Communications Industry Association, October 2000; http://www.ccianet.org/digitalgovstudy/main.html.

overlapping, duplicative, and wasteful, *and they could be consolidated into a more effective government-wide public information resources organization*.[84]

The government currently has multiple programs and channels for dissemination and access to tangible and electronic government information products and services, but the systems are not coordinated to guarantee comprehensive coverage and ready access or retrieval for current electronic information products, much less long term/permanent public access. The National Archives and Records Administration (NARA) has responsibility for the *retention and preservation of the records* of government, *but not necessarily for all publications of the federal government.* Therefore, from an agency standpoint, there is considerable confusion as to the laws, policies, and guidelines they should apply in differentiating between records they must schedule under the federal Records Act, and publications they retain which are not necessarily an official agency record.

GPO distributes tangible publications to depository libraries for current and permanent access in decentralized locations around the country, and provides cataloging and locator services for tangible and online federal government information products and services. In addition, GPO Access provides a number of electronic publications from all three branches of government to the public. GPO also offers many high-interest federal government print and CD-ROM publications for sale on a cost recovery basis.

Let us be a bit more specific about the inconsistency, overlap, and duplication between GPO and NARA. First of all, many of the publications in the Federal Depository Library Program (FDLP) would never be accepted by NARA for permanent preservation as records, but for the fact that they are evidence of GPO fulfilling its mission to operate the FDLP. NARA itself will not accept deposits of documents from the FDLP except every four years at the end of a Presidential term (and the agency would prefer to take them when they are even older). NARA refers routine inquiries for government documents to the regional depository libraries (as do many federal agencies). In short, the NARA staff indicates it wants to be considered the 'source of last resort,' not the source of first resort. Also, NARA does not have a program for interlibrary loans; they will duplicate material for a fee (not usually on a timely basis, however), but not lend materials. Depositories do loan as well as duplicate, and, as libraries, are usually able to respond more quickly when the occasion calls for it. NARA collects information at the end of the government information life cycle, not in the middle or at the beginning of it. NARA arranges materials in groupings by archival categories (such as agency programs), not by library classification or subject headings. Consequently, accessing at the level of individual items is far more difficult using the National Archives Information Locator (NAILS), than using library systems. Finally, NARA is not currently set up (or funded) to handle the volume of requests that would occur if that agency were the sole source, or even the primary source, of government publications and information products.

NTIS collects scientific and technical information ("STI") for their permanent collection and makes copies available for sale in multiple formats. The NTIS catalog and index are only available to the public on a fee basis and *most of the STI reports included in the NTIS clearinghouse are not provided to the FDLP for no-fee public access*.

The Commission fully understands the historical reasons why these different entities with overlapping and duplicative central information services and information management missions and functions were

[84] The Commission does not mean to imply that all duplication is bad. For example, agencies maintaining information collections for internal agency use and agency contractors can focus their resources on these primary constituencies and save both time and money for their agencies, while the Federal Depository Library Program has proven a cost effective means of establishing distributed collections of government information throughout the nation, accompanied by staff with expertise to assist users.

established. However, the seekers of the data, documents, and literature held by these different entities, including agencies, other levels of government, and the public, have the heavy burden of learning and utilizing quite different for searching and retrieving materials. *In short, there is considerable room for harmonizing these statutory requirements by using an overall systems approach, including greater utilization of the information life cycle management concept so as to integrate searching into a single, unified protocol.* The Commission addresses this approach in greater detail in its White Paper dealing with the Information Life Cycle Management approach.[85]

6.E. Central mission agencies may also overlap with cabinet departments and independent agencies with operating missions with respect to public information resources collections and services.

A number of operating agencies sponsor subject-oriented information clearinghouses for material in tangible and electronic formats in no-fee or cost recovery programs (DTIC, ERIC, MEDLINE, NCJRS, etc.). In addition, many agencies operate public information centers, public reading rooms, or specialized depository programs (such as the Census Bureau, PTO). As a rule, however, operating agencies are focused exclusively, or primarily, on their statutorily mandated missions, which may or may not emphasize provision of current or long-term broad public access and dissemination of their information products to the public. This occurs despite Title 44 requirements for distribution to GPO, the Administrative Procedures Act, and legislation requiring submission of scientific and technical reports to the NTIS.

6.F. Lack of uniformly applicable guidelines and standards to create electronic information products causes confusion.

In January 1999, NTIS initiated a pilot project with the Federal Depository Library Program was initiated to provide access for 22 depository libraries to new titles added to the NTIS collection in digital format from October 1997 to the present. They are producing an increasing volume of their information products and services on a decentralized, local basis through the Internet. Public access to these web-based information products and services may be limited, since they are not consistently included in the various existing government programs that foster information dissemination or information access, such as GPO Access or NTIS. Moreover, there are no agreed-upon standards used by federal agencies to produce tangible or online electronic products. The lack of standards causes problems for access to current materials, as well as for preservation and permanent public access of historical materials. Likewise, there are no coordinated programs or standards for permanent access to or preservation of tangible or online electronic media across all branches of government. Notwithstanding this finding, the Commission was pleased to see the distribution of "Guide to Electronic Publishing" by the Federal Publishers Committee and the Interagency Council on Printing and Publishing, which was received just as the Commission was going to press with this report.

6.G. The Government Information Locator Service (GILS) and metadata are critical to the national information infrastructure.

> The crucial question to address is whether the government can and should invest the resources required to add metadata/indexing functionalities **to all** federal government information or whether priorities, primarily the needs of the American public to gain access, should be established as to which information requires such detailed handling.

[85] The White Paper is available in Appendix 12 and at http://www.nclis.gov/govt/assess/infolife.html.

An example of an attempt to instill some discipline in the federal government, so that information, or information sources, can be discovered and accessed is GILS. The Paperwork Reduction Act of 1995 (44 U.S.C. 3511) directed the establishment of the Government Information Locator Service (GILS) to help the public and federal, state, and local government agencies locate and access information throughout the federal government. In concept, GILS could also assist agencies in complying with aspects of the Federal Records Act (44 U.S.C. 3301) and the Freedom of Information Act as amended in 1996 (5 U.S.C. 552). To date GILS, however, has been less successful than anticipated for a wide variety of reasons. Federal components that had significant information management organizations or interest (e.g. GPO, EPA, NTIS, DoD) successfully implemented GILS. GPO, with its GPO Access and NTIS with its FedWorld, implemented a GILS system that can serve all federal agencies and the public at large.

As well intentioned as these efforts are they are at the mercy of the various federal agencies implementing GILS. Many federal agencies, having higher spending priorities than GILS, did not implement GILS and OMB failed to enforce the requirement. OMB Bulletin 95-1, "Establishment of Government Information Locator Service," which guided the initial startup of GILS, expired. In lieu thereof OMB Bulletin No. 98-03, November 18, 1997 requires agencies to describe GILS progress in their annual reporting under the Paperwork Reduction Act of 1995. It is an irony that GILS has been far more successfully implemented by many states and internationally through the Global Information Locator Service—the international byproduct of the U.S. GILS—than in the U. S. federal government.

Problems also exist in regard to government locator services. GPO Access, for example, contains a broad array of links to federal government information. Yet in many instances, GPO must on its own seek out these online resources in order to assure that the general public is aware of them. Similar problems plague the Library of Congress' Thomas system in its collection of congressional information, and NTIS' FedWorld in its efforts to collect federal scientific and technical information. The judicial branch has proven particularly problematic in terms of providing locator services of even the most basic nature. This is due primarily to the lack of a defined and implemented program for posting opinions and court decisions online.

Beyond GILS, there are very important technical questions relating to the need to standardize metadata elements.

There is currently much discussion about the need for developing and deploying "metadata" or indexing systems to aid in the retrieval of documents, data sets, and other digital objects. If federal government agencies do not go to the effort of adding metadata/indexing terms to the digital objects they are providing on the WWW, neither the Internet search engines nor agency/interagency search engines can retrieve them in a reliable or consistent way or rank them for the user. The result of skipping the indexing step is a bad experience for most users.

The more information that becomes available in electronic form, the more necessary it is to provide would-be users of the information with a summary of the contents to facilitate indexing and retrieval. Of the technologies available today, automatic summarization programs generally extract only the first few lines of text as the summary. This method works if the author of the document has summarized its findings in the first few lines. Too frequently, however, the first few lines tell the user nothing about the contents of the document. This exacerbates the ability of the public to effectively sort through an answer set—one that may include hundreds of possible "hits"—to find the information sought. In short, summarizing or abstracting information has classically been done by humans, and often at great expense. That situation is likely to continue into the foreseeable future.

The crucial question to address is whether the government can and should invest the resources required to add metadata/indexing functionalities to all federal government information or whether priorities, primarily the needs of the American public to gain access, should be established as to which information requires such detailed handling.

There is another side to this issue. The following response from one the Departmental libraries queried for this effort is typical of the responses from others:

> The Main Departmental Library does not have a formal or informal arrangement with another government agency. We use the Library of Congress and GPO extensively and are pleased with the responses. We are a selective depository library, which adequately meets the needs of our Department. We receive minimal requests from other government agencies to share depository items. I would estimate that 50% of our clients' needs are satisfied via free websites. We rely on private sector products for about 30% of the needs of our Departmental clientele. Standardization could improve the environment of interagency sharing of information.[86]

6.H. The Government Information Locator Service (GILS) and FirstGov are both commendable initiatives and should development and testing should be continued and supported.

The Government Information Locator Service (GILS) established under the Paperwork Reduction Act of 1995 might have been expected to solve some of the problems identified in this section, and perhaps to a very limited extent it has. However, GILS has not been widely implemented throughout the government. The GILS record structure was publicized and agencies were required to use GILS but were permitted wide latitude in how GILS was to be applied. The result, to the extent that agencies participate, is a lack of consistency and predictability in search results.

Similarly, the brand new FirstGov.gov website might solve some of these problems in time, but the initial implementation of the website suggests that much work remains to be done, particularly with respect to search precision, which is critical to the NTIS application.

Even if GILS or FirstGov improve dramatically, some issues—such as detailed searching within a very large database such as the full text of NTIS reports—will not be solved by these very large government-wide systems. Thus, there will continue to be a role for NTIS.

6.I. Unnecessary duplication and overlap among agencies with central government-wide information services and information management roles and activities is critical and must be resolved.

The relationship between NTIS and the Superintendent of Documents, including the Federal Depository Library Program, addressed more fully later in this report, clearly involves some unnecessary conflict, overlap, and duplication between these organizations and their missions and functions, and there is a critical need to rationalize their roles. This challenge, while beyond the scope of the efforts of the four panels, nevertheless is addressed squarely by the Commission based on other research and findings.

There appears to be—especially at this stage of Internet development—a clear need for an NTIS-like organization to provide overall management of the system that provides public access to agency

[86] The results of the survey are available in Appendix 26 and at http://www.nclis.gov/govt/assess/nclismsg.html.

scientific and technical reports and publications. Sometimes this organization would directly provide public access to reports and publications, sometimes it would simply point to where the material is available on agency websites and it would insure that all content is available and accessible. It would also provide access to private vendors seeking to redistribute government information. Closing NTIS before such alternative systems are in place and operating would deprive the public of the access to government information that was available in pre-Internet days.

7. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—THE NATIONAL TECHNICAL INFORMATION SERVICE

7.A. The pre-1980's sales based business model is an historical artifact that is no longer appropriate.

In the 1970's and earlier, NTIS and its predecessor organizations received a mix of funding from appropriations, sales income and reimbursements from other agencies. The basic business model, however, was based on sales revenue, with report sales and subscription income generating the lion's share of revenue. Appropriations in the earlier years were used primarily for the costs associated with acquiring publications and for processing the publications into the NTIS collection—the costs of indexing abstracting, creating master microfiche and archiving master copies. Sales income was recovered from the purchasers of publications and subscription services, essentially for the incremental costs of providing these services, although in later years excess sales income was also used for input processing to offset declining appropriations. Reimbursements from other agencies were received to cover the costs of the services provided to these agencies.

7.B. The transition to 1980's sales income model was detrimental to NTIS' core mission.

Over the years there was an ongoing pressure to reduce appropriations and increase sales income and in good times—with many new publications coming in and with substantial sales—this was feasible. Increasing prices and new products combined with growing sales volume contributed to growing sales income. In fact, all appropriations for input processing were phased out by 1977 and sales income was used to pay all input costs from that point on.

In 1992, as part of the American Technology Preeminence Act (15 USC 3074b-1), Congress added the requirement that "operating costs…associated with the acquisition, processing, storage, bibliographic control, and archiving of information and documents shall be recovered primarily through the collection of fees." This had the effect of locking in the practice of shifting the costs for the central collection and initial processing of the NTIS publications for public availability from the general taxpayer to the purchaser of NTIS products and services. The government was essentially abandoning responsibility for paying for the management and organization of its information, the very library-like functions that have always been taxpayer-financed. The report buyer—whose tax dollars had already paid for the agency research and the preparation of the research report itself and who was being charged the incremental cost of distribution of the report—was now also being asked to pay the costs of making the reports accessible to the public through a central repository.

This had the effect of making NTIS more entrepreneurial and aggressive in its business dealings to raise the operating funds lost in the appropriation. These activities were sometimes at the expense of the core mission for collection, organization and dissemination of scientific and technical information (STI). Competition with the Superintendent of Documents for popular titles increased with NTIS seeking to offer the publication-originating agency a more attractive arrangement to secure the

publication for its list. Deals were struck with private vendors a development that had the Commerce Department Inspector General "…concerned that in order to replace lost sales, NTIS is seeking business opportunities on the perimeter of its statutory mission, where it risks competing against private businesses." [87]

7.C. Agency competition with NTIS began in the 1990's with free web availability.

Concurrently, in the late 1980's and 1990's, because of the strong economy there was a shift from publicly funded research to private research and as a consequence the number of government research reports provided to NTIS declined. At the same time, with the growth of the Internet, agencies began to make their research reports available on agency websites for free, competing with NTIS report sales. The combination of lower new report input (a 35% drop in items added to the collection from 1993 to 1998) and competing free sources for the information NTIS sold, resulted in declining sales (a 43% drop in publications sold from 1993 to 1998). This in turn led to the financial difficulties of NTIS. In August 1999, based on these financial difficulties and political considerations beyond NTIS' control—possibly relating to the Govsearch and World News Connection controversies,—the Department of Commerce recommended the closing of NTIS and the transfer of its archive to the Library of Congress.

7.D. Incomplete holdings available on agency websites force users to search both agency and central mission websites such as NTIS.

If the picture painted in the Department of Commerce Fact Sheet and Press Release (Department of Commerce August 12, 1999) is correct, all agencies will mount all of their publications and reports on their own websites, which are then kept there as long as the public has a need to access the information. Powerful search engines search the full text of all the reports across all agency sites to identify the specific information the public user requires. The identified full text of the publication is then available for free downloading from the agency website. Thus, the public has free access to all government information all of the time and anything required can be located with ease and there is no need for a central NTIS, a central Superintendent of Documents or any central document locating service or information accessing tools. T*his picture, however, is not anywhere near accurate.*

Unfortunately, not all of each agency's public information is available on the agency's website and perhaps much of it never will be. What is there today may not be there tomorrow. Not all of the information on the Web can be searched and found with the search engines. Can the United States afford to rely upon the simplistic and utopian picture painted by the Department of Commerce and close down its central information repositories?

7.E. The NTIS collections are "of value to business and industry" regardless of subject matter.

NTIS' predecessor organizations began operations with a scope limited primarily to scientific, technical and engineering information, the so-called STEI gray report literature. Over the years the scope of the NTIS collection expanded to include social science and business information to meet the needs of government agencies for the distribution of their content.

These changes in scope were approved in a 1954 Controller General opinion later codified in the Code of Federal Regulations (15 CFR 1180). Scientific, Technical and Engineering Information is defined

[87] Department of Commerce, Inspector General's Semiannual Report to the Congress of March 31 1999, page 14.

as "information that bears on business and industry generally, such as economic information, market information and related information" that "can embrace matters beyond the restricted field of applied science and the mechanical arts" so long as it is "limited to information which has a direct relationship to business, industry or technology" (15 CFR 1180.2).

The Commission does not believe NTIS' scope should be restricted to science and technology *narrowly defined*. However, the scope should *not* include general public information that does not have a strong and direct relationship with business, industry or technology. In its efforts to find revenue to support its operations, NTIS has expanded to scope of its coverage well beyond its primary mission.[88]

7.F. NTIS operations in the Internet age require searchable access that cuts across agency boundaries.

The roles for NTIS in the Internet age—at least until such time as improvements in standards and technology solve some of the current problems—would be to provide:

1. Searchable access to the reports and publications published by the mission agencies, particularly to those users outside the agency's constituency,
2. Pointers to where the report may be obtained on an agency (or other) website,
3. Backup distribution of the report or publication content itself when it is no longer available from the originating agency or where the user requires a paper or microfiche copies and the agency only provides electronic access, and
4. Permanent Availability and Accessibility.

Providing searchable access to agency reports has been the basic business of NTIS and its predecessors since its inception over half a century ago. NTIS performs this function by cataloging, indexing and abstracting the reports of the smaller agencies and other sources that do not perform these tasks for their own audiences and creates the searchable NTIS database. For the larger agencies that do this work themselves (DOD, DOE, NASA, etc.), NTIS obtains their cataloging, indexing and abstracting information in machine readable form, reformats it, if necessary, and adds it to the searchable NTIS database. NTIS now augments this with similar data obtained by NTIS' web capture of agency documents not forwarded to NTIS. The resulting NTIS database provides consistent searchable access to the NTIS collection across all of the participating agencies.

This database should be made available on an NTIS website for free public search, thus providing free (publicly funded) access to a searching capability of the information collected by NTIS. This same capability would provide depository libraries and their patrons with convenient, free searchable access to the NTIS database. Note that this is not access to the content of NTIS reports, but only to the database of information about the reports, usually referred to as the bibliographic database.

7.G. Pointing to documents on the web is an essential service.

Providing access to information about the document is only the first step. The Panel recommended that NTIS provide the user with a means of obtaining the documents identified. In the past, NTIS sold the documents from its warehouse, produced copy on demand when requested or distributed microfiche.

[88] For example, the Department of Commerce has questioned NTIS' role in the dissemination of tax forms for the Internal Revenue Service (IRS), and GPO has questioned the need for NTIS to distribute the *Government Manual* and other GPO general interest "best sellers." There is additional discussion of these issues under Recommendation 14.

In the future, in addition to these established methods of distribution, NTIS will also point the user to the document on the agency's website where the full text of the document is available for free. Whenever there is a Web version of the document available, NTIS, through its bibliographic database, would point the user to the agency's Web location where the document can be viewed or downloaded. In some instances a document that is not available on an agency's site, might be available at the Government Printing Office (GPO) or on a depository library site under the Federal Depository Library Program Electronic Collection. NTIS would then point to that site. The Commission notes that the Government Printing Office (GPO) is already taking steps to establish such links for information that falls within the scope of the FDLP, as most of the NTIS collection does, and NTIS should find ways to join in this effort, so that both programs are strengthened, and new redundant efforts are not initiated.

The Panel recommended that NTIS develop and operate, in conjunction with the originating agencies,[89] a Persistent Uniform Resource Locator (PURL)[90] system for all of the agency documents included in the NTIS database. This would provide a means of maintaining the public accessibility of documents on agency websites as the agencies move the documents from site to site and from location to location. The NTIS database would provide the PURL address of the document so that users of the database would always be able to access the complete text of the document available for free on the Web. NTIS would operate a PURL server, which keeps track of actual document locations on the Web updated with new location information provided by the agencies or by NTIS' monitoring of existing links to documents in the database. Again, the Commission notes that the Government Printing Office (GPO) is already taking such steps for information that falls within the scope of the FDLP, and NTIS should find ways to join in this effort, so that both programs are strengthened, and new redundant efforts are not initiated.

7.H. NTIS would be a backup distribution source.

The user would normally only come to NTIS and pay for a document when it is not available for free on a website or when the user desires paper or microfiche. Some users would no doubt find paper or microfiche preferable to Web access and would choose to pay NTIS for the copy, paying the full incremental cost of distribution even though free Web access is available.

In addition to pointing to documents on agency websites, an NTIS website would provide free access to the full text of selected NTIS documents in reasonable demand (recent important documents) which are not available on agency websites. To do this economically, NTIS will have to change the way in which it scans reports for the Web. NTIS currently scans documents in image-only format, which does not provide for searchable full text, limits the utility of the product offered on the Web and increases the costs of storage and electronic distribution. By moving to fully electronic documents with encoded text, NTIS can lower storage and bandwidth costs and improve product utility. This will however increase NTIS' scanning costs.

There will continue to be a substantial number of image-only scanned documents in the NTIS system for some time (representing at least the three-year backfile that has already been scanned). Over time

[89] As noted elsewhere, GPO is already taking such steps for information that falls within the scope of the FDLP. Therefore, NTIS should not just cooperate with the originating agencies, it should find ways to join in the GPO effort, so that both programs are strengthened, and new redundant efforts are not initiated.

[90] The use of PURL is not a definitive statement of the appropriate technology. Another option identified by the Commission is the Digital Object Identifier (DOI), currently used by the Defense Technical Information Center (DTIC). The statement here is rather an indication that some effort must be made to provide stable links to information on agency websites. It should be noted that establishing a PURL or a DOI cannot ensure that the agency will maintain the publication on its website; it merely increases the chances that the user will find the information as long as it does remain on the website.

we would expect more and more of the publications available from NTIS to be available in full electronic format, either forwarded to NTIS from other agencies or scanned in full electronic form (OCR) by NTIS itself.

All of these documents in Web-ready form, whether in image-only form or in full electronic form, would be made available to the public without charge from an NTIS website if they are not available on the originating agency's website or some other publicly accessible website, e.g. Depository library site.

As a result of this approach—substantial free access to documents on agency and NTIS websites—NTIS document sales income will continue to decline dramatically as more and more content is made available on the Web without charge. This expected decline in sales income would have to be considered in the new business model. Specifically, the notion of free public access to NTIS reports on an NTIS website requires the appropriation of funds for the so-called public good operations of NTIS (see following section on "A New Business Model for NTIS").

7.I. NTIS has a permanent mission, but needs a new vision and new business model.

The NTIS mission, which began (in the days when it was known as the Publications Board) with a focus on the cataloging, announcement and sale of copies of captured World War II technical documents, has changed and expanded over the years, and was later expanded by statutes such as the American Technology Preeminence Act. There was some sense among the study participants that in recent years the mission and scope had expanded well beyond the statutory boundaries in part to increase revenues to offset declining sales income and decreasing appropriations. The scope of NTIS information has expanded from scientific and technical reports to almost all manner of reports and publications of interest to business, industry and technology.

One Commission expert disagreed with this idea, believing that agency publishing on the Web has, or will soon completely replace the need for an NTIS, no matter where it might be organizationally located.

8. FINDINGS RELATING TO INTERAGENCY GROUPS (E.G. CIO COUNCIL, FEDERAL WEBMASTERS FORUM, CENDI, ETC.)

8.A. CENDI was established because of an absence of central official STI policy and oversight authority in the Executive Branch.

CENDI was originally the **C**ommerce, **E**nergy, **N**ASA, **D**efense, **I**nformation group, a voluntary group comprised of the heads of Commerce's National Technical Information Service (NTIS), Energy's Office of Scientific and Technical Information (OSTI), NASA's Scientific and Technical Information (STI) program, and Defense's Defense Technical Information Center (DTIC).

The four founding organizations from some of the largest federal agencies involved in research development were principally involved in managing STI recorded in technical reports. This type of report is not formally published but records results of federal R&D done either in house or through contracts or grants. Such reports may or may not be made publicly available since they may contain information falling within the exemptions of the Freedom of Information Act (FOIA). The Energy, NASA, and Defense organizations traditionally shared their collections with each other and provided publicly available information to NTIS for acquisition by the general public. In 1986 the National Library of Medicine (NLM) joined CENDI. NLM, while not handling technical reports, had many of

the same information management challenges. Thus, with these five organizations meeting regularly and sponsoring working groups and standing committees, the federal agencies responsible for over 90% of federal R&D had established a voluntary interagency information and information management sharing effort to fill the void left with the disestablishment of COSATI. CENDI now has ten members from nine different departments or agencies. The CENDI Secretariat is paid for through member contributions.

8.B. Federal Geographic Data Committee (FGDC) is also a success story.

The Federal Geographic Data Committee (FGDC) is an interagency committee, organized under OMB Circular A-16. Organized in 1990 the FGDC promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of representatives from seventeen Cabinet level and independent federal agencies. The Steering Committee sets high-level strategic direction for the FGDC as a whole. The Coordination Group advises on the day-to day business of the FGDC. The FGDC Secretariat staff provides staff support for FGDC committees. For example, the Federal Geographic Data Committee coordinates the development of the National Spatial Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The federal agencies that make up the FGDC are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector.

The CENDI group mentioned in the preceding finding, and the FGDC's efforts mentioned here, are examples of what can be done to share information among agencies. There are three keys to these efforts. One key is agency recognition that their information may have a wider value beyond its original use. A second key is the existence of either a central agency information management organization or an organization that acts as one. A third key is some level of funding.

8.C. The CIO Council still leaves unfulfilled expectations vis-à-vis information content management.

The President's Information Technology Advisory Committee (PITAC) Panel on Transforming Government said in its 1999 report that:

> The Federal CIO Council's...mandates require them to focus primarily on near-term operational issues and acquisitions. Budget planning processes make it difficult to carry out effective cross-agency coordination and execution and the long-term research efforts that many of the goals require.[91]

The Committee noted that, while "the CIO Council has established mechanisms for sharing results and lessons, the process of creating standardized processes and information representations, eventually leading to cross-agency transactions and information federation and integration, is much harder and requires cross-agency budget planning and execution. Creating cross-agency budgets requires substantial work and, therefore, is used only for large initiatives. Depending on cross-agency plans is very risky because of the uncertainty that all participants will receive adequate funding. …"[92]

[91] [Insert citation]
[92] [Insert citation]

9. FINDINGS RELATING TO STATE, LOCAL, AND TRIBAL LEVELS OF GOVERNMENT

9.A. Distinctions between different levels of government are critical in finding public information resources.

In its October 18th evaluation of FirstGov, one of the criticisms made by the American Library Association[93] was that many users (of government information portals and websites) "are not aware that the .gov domain may also be used by state or local governments. FirstGov is supposed to be primarily a federal government information resource. Links to state and local governments that come up in search results should, therefore, either be expressly identified as such to distinguish them, or be searched with a different search form."

The point here can be usefully generalized. Too often agencies assume when they design, develop, test, and eventually "go live" with information systems, portals, websites, and other information resources designed for the public, that important distinctions can and should be made between the federal level and the other levels of government when it comes to public information resources availability and accessibility conventions. In some cases it may make sense to make such systems and resources applicable to all governmental levels, but if that is the decision, the scope of the holdings to be made available should clearly indicate all levels of government. In other cases, however, only the federal level is applicable, and in still others only the state level, or only local level, or only the tribal level, and so forth.

9.B. Beyond finding public information, the federal government needs to strengthen its intergovernmental information interchange coordination role.

Beyond the questions above surrounding the importance of governmental level distinctions in finding tools for government information, the Commission found that the coordination between and among the different levels of government when it comes to interchanging and sharing government information is flawed and needs to be strengthened. The Advisory Commission on Intergovernmental Relation (ACIR) has a statutory mandate pursuant to Public Law 104-328, Oct. 19, 1996, to oversee this area.

10. FINDINGS RELATING TO THE COMMERCIAL (FOR PROFIT) SECTOR

10.A. The private sector has a key role both by itself and as a "partner/provider" that adds value and further disseminates government information.

The private sector plays an important role in providing government information to the public, as well as in enhancing the value of products and services, in online, print, and other mediums and formats. Libraries and businesses rely heavily on the private sector for packaged and repackaged information products and services. However, for that purpose, the private sector, like libraries and federal agencies, needs to acquire government information efficiently, quickly, and in usable and flexible formats and mediums, in order to supply value-added information to its customers. Private industry also can help government by sharing experience and expertise in electronic publishing, packaging, and related fields.

[93] [Insert citation]

The private sector role in adding value to government information to create new products and services fulfills the needs of those citizens who are willing and financially able to pay for these enhancements, and/or who wish to obtain access to government information from sources other than the government itself. Private sector organizations, both for-profit and non-profit, play an essential, complementary role in making optimum use of government information. They may repackage the information in value-added products, and provide value-added dissemination, in order to reach wider audiences including disadvantaged and special populations. By incorporating the information in supplemental catalogs and indexes, they expand use many times over.

In some cases, through public-private sector joint partnerships, the private sector assists in the publication of information products that may otherwise not have been published. In the best models of such public-private sector partnership programs, the products are included in GPO'S cataloging services, and the publications are provided to the FDLP for some limited no-fee public access to complement the sales access. Moreover, the private sector plays an important role in the development of new technology and new systems for information publication, access and retrieval—functions that enhance government programs. It is very likely that when there is market demand, value-added private-sector government information products and services will be maintained for permanent public access. Once the economic motive disappears, the future access to such products and services is less certain.

10.B. Business and industry utilization of government information is evidence of the return on taxpayer investment.

Business and industry, not to mention universities and other elements of the private sector all need government information for all aspects of their operations. Their government information needs range from regulatory information to financial, economic, and demographic data, scientific and technical information, and weather. Making information easily accessible to business can result in better decisions, better compliance with regulations, greater productivity, and improved balance of trade status. Efficient and widespread dissemination of information using the Internet is the key to connecting agencies collecting and storing information with the individuals and organizations that can use the information to solve problems and generate new knowledge.

One very specific and tangible example of this is that R&D contractors who do business with the government often look upon the reports deposited with NTIS as a de facto archive of their information, rather than go to the expense of creating their own special archival collections that duplicate what they've deposited with the government. This is a substantial return on investment that would be eliminated if NTIS were to disappear.

10.C. The private sector faces difficulties in keeping up with government rules and regulations relating to public information dissemination.

Specialized government search and locator services run by private or non-profit sector entities have even greater difficulty than the government itself does in keeping up with new federal information sources provided online. Unlike the Government Printing Office or the Library of Congress, the private sector, including private sector libraries and educational institutions, enjoys no special relationship, nor has it been able to rely on legal or regulatory mandates, to assure that they are kept informed of new government information services. Two areas of user assistance in which the private sector tends to excel for those who purchase the services are in providing personal interfaces and in maintaining quality search and retrieval mechanisms. They have likewise been more effective in

developing and providing summary source information, including special indexing and abstracting services.

10.D. Joint ventures and private sector partnerships are often a preferred modality, rather than government trying to "go it alone".

As the result of the National Technical Information Act of 1988, NTIS has unique statutory authority for joint ventures with private sector information vendors (15 U.S.C. 3704b(a)(1)(A)). NTIS will typically use this authority to find a private sector partner who is willing to underwrite the cost of producing an information product that an agency can no longer produce either because it lacks the funds for printing or the staff resources to develop it. It will then share the resulting revenue with the partner and provide copies to the depository libraries. A good example is the Commerce Department's own "U.S. Industry and Trade Outlook," the successor to the "U.S. Industrial Outlook" which had been produced for more than thirty years but had been discontinued. It was reintroduced in 1998 with a new focus on trade pursuant to a partnership between NTIS and the McGraw Hill Companies and was reissued in 1999 and again in 2000. However, the mix of public and private (copyrighted) information in the publication made it difficult for users to know what information was protected by copyright and what was in the public domain.

In addition to joint ventures, NTIS makes its own Bibliographic Database available to vendors who add value to it, redistribute it, and pay NTIS a portion of the revenue they derive from it. Although this royalty may not be appropriate under the new business model to be suggested by this report, the role of NTIS in providing a central gateway to government information for potential private sector vendors is a valuable role that would continue in the Internet age.

11. FINDINGS RELATING TO THE NOT-FOR-PROFIT SECTOR, INCLUDING PROFESSIONAL ASSOCIATIONS

11.A. The not-for-profit sector is a user of government information and is quite diverse.

The not-for-profit sector, like the other sectors, is quite diverse, and includes associations and societies, foundations, think tanks, consulting organizations, public interest groups, consumer groups, local community organizations, social clubs, and so on. These organizations play a major role in the redissemination of government information, including notification of their constituencies of the availability of relevant government information products and, in some cases, value-added republishing. Academic and public libraries, whether publicly or privately funded, organize collections of government information and have knowledgeable staff to assist their patrons with the location and use of government information.

11.B. Role of not-for-profit sector is important as a value-adder to government information

Like the for-profit sector, the not-for-profit sector also plays an important role in adding value to government information to make it more valuable for all users. More specifically and importantly, associations and societies, and public interest groups, repackage information for their respective members or special clienteles, making the information easier to use, and more applicable and relevant

to their specific concerns. The results of the Commission's survey of disadvantaged and special populations attests to the importance of this role.[94]

11.C. Partnerships between federal agencies and major research libraries are critical to preservation and access solutions.

The major research libraries of the country are key elements of any system for preservation and access of government information and therefore partnership arrangements that currently exist between the two sectors should be strengthened to squarely address these challenges. One commendable arrangement is the one entered into by the Government Printing Office, the Department of State, and the University of Illinois at Chicago for the selection, acquisition, preservation, and archiving of certain foreign affairs materials.

11.D. Library and information professional associations are well positioned to expand education, training, career advancement, and related professional opportunities workshops; funding should be provided in part through grants from the library services and technology act grants programs

Elsewhere in this report the Commission has addressed the need to transform the Federal Depository Library Program (FDLP) from a largely paper-based collections model, to a modern, Internet-based electronic model. One of the expanded functions contemplated for the revitalized FDLP would be as a trainer to other librarians, information managers, and other information professionals, user groups, and the public at large, for accessing government information. There is a critical need to significantly expand and extend the education and training of librarians who are not already in the FDLP because, in an Internet-based model, not just depository libraries, but public, academic, school, law, and special libraries, information centers, record and archive facilities, museums, and other repositories, will also require specialized government information access skills and knowledge.

Many depository librarians already offer training and instruction to other librarians and user groups within their respective Congressional Districts and beyond. A central web list of FDLP Reference/Training Partnership Participants could be established and linked to by several central information services agencies as well as individual mission agencies. This web list could be
Organized by topic/expertise of the Partnership Participants and by Geographic area. The FDLP Reference/Training Partnership Participants would list training expertise and preferred audience: business, K-12, special libraries, and so on, and preferred geographic area served.

12. FINDINGS RELATING TO OTHER AREAS, INCLUDING INTERNATIONAL INFORMATION POLICY

12.A. The United States is looked upon as a leader in the Internet Age and should share its findings and expertise with respect to helping every country, especially those in the developing world, better exploit and utilize their government information holdings for the betterment of all of their citizens.

The United States already participates in many international intergovernmental forums with other nation-states in arenas where various “specialized” information policy issues and concerns are debated

[94] The survey results are available in Appendix 27 and at http://www.nclis.gov/govt/assess/special.html.

and discussed. These include the United Nations and its many specialized agencies, as well as the International Telecommunications Union (ITU), the International Council of Scientific Unions (ICSU), and many others. However, there is no fully appropriate existing international inter-governmental forum in which the key concepts espoused by the Commission in this report—the idea of treating public sector information as a strategic national asset—are advanced and discussed. If the United States rejoins UNESCO soon, that might well be the most appropriate forum, but, if U.S. membership is appreciably delayed, then other international avenues need to be explored. The Commission is already committed to supporting the National Forum on Information Literacy, in close coordination with the U.S. Department of Education, in planning the first international congress for information literacy, perhaps utilizing UNESCO as the forum even though the U.S. is not currently a member.

E. CONCLUSIONS

After reflecting carefully on all of its findings, the Commission reached the following conclusions with respect to the significance, implications, and consequences of the findings. Conclusions consolidate all of the findings relating to the same category.

1. CONCLUSIONS RELATING TO INDIVIDUAL CITIZENS (THE GENERAL PUBLIC)

The federal government should continue with the development of prototype new portals, such as FirstGov, for the purpose of putting in place a "yellow pages" approach to help citizens know what government information exists that may help them, whether it is available to them, how it is identified so they can search for and retrieve it, and how to utilize it effectively to meet their needs once retrieved. Lower levels of government should coordinate closely with the federal initiatives to ensure that the availability of government information can be determined by level of government as well as subject matter, and to ensure the intergovernmental finding tools are complementary and consistent. Locator tools must be fine-grained enough to distinguish the full range in the level and quality of computer and information literacy among the public at large, from the very sophisticated at the one extreme, to the disadvantaged and severely handicapped at the other. The public should come to regard government information as one of the first places to go, not a "court of last resort." User assistance methods, tools, and techniques should be tailored to the full range of quite diverse users—there is no "one size fits all" approach.

2. CONCLUSIONS RELATING TO DISADVANTAGED AND SPECIAL POPULATIONS

The federal government should monitor Section 508 of the Rehabilitation Act very carefully, as well as other statutes with provisions to responding to the needs of the disadvantaged and disabled, to ensure that the goals and objectives of the legislation are implemented both in spirit, and "to the letter of the law." Disadvantaged and special populations, especially the physically and emotionally handicapped and disabled, but also including race, religion, culture, ethnic, or other minorities, the gender-discriminated, senior citizens, school age children, and rural populations, all face formidable barriers to accessing government information which are not faced by the general population. Therefore, the government must be sensitive to these special needs, and constantly strive to innovate in the application of state-of-the-art technologies and approaches to providing public information resources.

3. CONCLUSIONS RELATING TO ACADEMIC, RESEARCH, AND RELATED INSTITUTIONS

The federal government cannot afford to erode the level and quality of government information services provided to the nation's academic, research, and related institutions. The science laboratories, the classrooms and lecture halls, and the workbenches of individual entrepreneurial inventors working in their garages or basements across the country are, in a very real sense, the front lines of America's highly touted distinctive economic competency in the world. The government cannot risk reducing the level of government information services to these individuals and institutions because of quarreling over which financial account funding for government information services comes from.

4. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—GOVERNMENT-WIDE POLICY LEADERSHIP AND OVERSIGHT

The government should not undermine or close down central information services, which provide indispensable services to all mission agencies, because of the Internet, just to save a few pennies. The services they need could not otherwise be done for themselves individually, much less in a coordinated fashion across all agencies to serve their own missions as well as the public at large. The challenge is to redesign, reconfigure, and consolidate government-wide policy leadership and oversight in four areas:

- the agency or "institutional" area;
- the statutory area;
- the policy guidance area; and
- the technical guidance area.

Traditional information services and information management approaches, including public information dissemination machinery, must be harmonized and blended with electronic, web-based approaches so that both domains are perceived as part of the same whole fabric, not overlapping and competitive, or downright inconsistent and incompatible in some cases. At the same time, the level and quality of government-wide information services, as in the case of NTIS, must not be degraded until such reforms can be affected.

This means:

- Consolidating, simplifying, and streamlining the government-wide public information services organizations into a single, new Executive Branch agency, the Public Information Resources Administration, and creating comparable organizations in both the Judicial and the Legislative branches;
- Revisiting the mandates for using sales income to support the central services and, instead, providing appropriated funds for the limited central services (public good function) that provide a true benefit to the public that would not otherwise be provided by uncoordinated individual agency web initiatives;
- Upgrading and modernizing pre-Internet Age authorities, responsibilities, missions, and functions, with a new vision that is Web-based and predicated on the ultimate, inevitable shift of public information products from pre-Internet to Internet availability;
- Paying special attention to the information needs of the disadvantaged and special populations, intergovernmental sharing of government information, interagency sharing of government

information, better use of public-private sector partnerships, and renewed attention to the development of information standards and guidelines;

- Strengthening government-wide detailed guidance on interagency sharing. OMB Circular A-130 does not adequately address government information sharing among federal organizations. There is provision to guard against the creation of new information flows and systems where existing flows and systems could satisfy a need, and thereby preclude the development of new, duplicative flows and systems, but Circular A-130 addresses information sharing among government agencies primarily from the standpoint of paperwork reduction, urging agencies to look at satisfying new information needs through interagency or inter-governmental sharing. *In fact, intra-agency or interagency use of sharing of government information is specifically excluded from the A-130 definition of the term "dissemination."* Sharing of information *systems*, not information *content*, is the focus of the policy requirement, but sharing of content is even more important than avoidance of unnecessary overlap and duplication of systems;
- Rooting the definitions of three key public information resources management in statutes and appropriate policies, including permanent public availability, authentication, and preservation; moreover, the first one of these, permanent public availability, needs to be carefully harmonized with the notion of permanent records retention as that term is used in the Federal Records Act;
- The Information Life Cycle concept needs to be strengthened and clarified in the forthcoming reauthorization of the Paperwork Reduction Act in 2001, and the corresponding changes in the next revision of OMB Circular A-130 so as to link internal and external agency information management more closely together at each stage of the life cycle; and
- The time is overdue for the Congress to review the hundreds of laws that it has enacted over the last several hundred years for the purpose of assessing how the government's cumulative, overall public information resources program can be strengthened, especially in the Internet Age; the Commission could be directed by Congress to undertake this analysis, but would prefer to do so with the assistance of the Congressional Research Service (CRS), the General Accounting Office (GAO) and the National Research Council.[95]

5. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—INDIVIDUAL AGENCIES WITH OPERATING MISSIONS

Individual agencies are experimenting a great deal with employing creative and innovative ways to disseminate information to the public, and to interact with the public using state-of-the-art interactive and multi-media formats. Yet many of these experiences, and the lessons learned, are lost because there are so few effective mechanisms for systematically capturing and recording these experiences and sharing them among the federal agencies, between branches, and even inter-governmentally. Smaller agencies, in particular, are disadvantaged in this respect, because they need such ideas the most, but yet they have the least effective capabilities to capture this kind of information. An expert advisory list, an email newsletter and portfolio with interesting "What's Worked for Me" ideas, and/or tools that is available for the agencies to use, etc., could be very helpful. The CIO Council could pull together such a compilation and such tools, and some good work has already been done along these lines. A number of excellent model agency public information resources policy statements, such as EPA's Chapter 21 cited in the corresponding Findings section above, could be included in such a portfolio of best practices.

[95] The need for such an analysis is discussed in Findings 4.C and Recommendation 15.

We have mentioned more than once in this report that the current information technology environment is extremely volatile. New formats are being developed every week and every month. Not without cause, many are worried, for example, that the advent of XML will automatically cause the obsolescence of public information products available in other formats, especially PDF which is considered vulnerable because the text cannot be manipulated. There is a strong feeling in federal agencies that periodically, perhaps once every three years, a survey should be undertaken similar to the one undertaken by Westat for NCLIS on the migration of pre-electronic to electronic formats. That survey would endeavor to pinpoint "preferred" formats for the full range of data types:

- Bibliographic data;
- Graphical data (photos, charts, graphs, tables, drawings);
- Numerical data;
- Sound;
- Spatial data (maps, coordinate files);
- Textual data (books, serials, reports);
- Video;
- Multimedia (sound, video, text, graphics); and
- Other.

The major format types should also be surveyed to attempt to discern patterns of preference, including:

- Database formats (Oracle, Sybase, dBase, WAIS, MARC);
- Spreadsheet formats (Excel, Lotus 1-2-3);
- Tagged Markup formats (HTML, XML, SGML);
- Image formats (GIF, JPEG, TIFF, PDF);
- Audio formats (WAV, AU, AIFF);
- Video formats (MOV, MPEG, AVI);
- Text format (ASCII, Rich Text, ANSI);
- Word Processing format (WordPerfect, Microsoft Word); and
- Other formats.

Online approaches would also be tracked. For example:

- User Interfaces Supported (Netscape, Internet Explorer, Telnet, FTP, non-graphical/dial-up shell);
- Web Design Approaches (Basic HTML only, Tables, Frames, CGI Scripts, use of Java script, Use of Java Applets, XML); and
- Bulletin Board Systems (Graphical interface/browser)

How information products are searched, how they are retrieved, changes if any in the type of data included, changes if any in what particular timeframe (short, medium, long-term), the use of metadata records, and policies relating to permanent public availability and accessibility, permanent records retention, preservation, and authentication, would also be surveyed.

Additionally, despite the fact that paragraph 9(a)5 of OMB Circular A-130 specifically requires that agencies "maintain an inventory of agencies' major information systems, holdings, *and information dissemination products*, as required by 44 U.S.C. 3511 (italics supplied), this requirements has never been adequately enforced. Without a comprehensive, authoritative inventory of products, it is virtually impossible to systematically know that a given product still exists, whether it has been changed or not, when it was changed, how it was changed, or whether it has been discontinued entirely. Is it any wonder that the public views with alarm the tendency of some agencies to take down from their websites products that were put up only the day before?

Finally, the Commission is disappointed that in most agencies, with the notable exceptions of the defense and intelligence communities, by and large agency public affairs officials do not normally involve themselves in "institutional matters relating to electronic information publishing and dissemination." Perhaps, in the paper era they did get involved, but few such officials with whom the Commission discussed this matter, indicated that they had "hands on responsibility" to work with agency webmasters, for example, in the development of agency electronic publishing guidelines. Perhaps it can be argued that such officials have their hands already full putting out the hour-to-hour fires related to the agency's complex relationships with the media, public speeches of their principal officers, legislative liaison with the Congress, and so on.

However, a laissez-faire, hands-off attitude cannot but exacerbate the already difficult challenges facing agency chief information officers in the electronic publishing arena. In short, most agency public affairs offices are staffed with professionals whose expertise in dealing with the public on agency information products is unmatched anywhere else within the agency. Their expertise must be harnessed and mobilized in the service of public information dissemination.

6. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—CENTRAL AGENCIES WITH GOVERNMENT-WIDE INFORMATION SERVICES AND INFORMATION MANAGEMENT MISSIONS (EXCEPT NTIS)

It seems quite apparent that the same problems that precipitated the proposal to close NTIS in the first place are not limited to NTIS, but are endemic to all agencies with public information dissemination missions and functions, whether agencies with government-wide, central missions, or agencies with operating missions such as the cabinet departments and independent agencies. The Commission faults the rationale that would lead to a "solution" of the problems by one such agency (e.g. NTIS), when, in fact, a different solution is left in place for another agency (e.g. GPO, USGS, the Census Bureau, and so on). The statutorily authorized sales policies, the statutorily authorized revenue policies, and the statutorily authorized charging policies for all agencies should be reasonably consistent, albeit taking into account some exceptions.

There is an unnecessary and wasteful proliferation among agencies with government-wide information services and information management missions and functions, including databases and collections, portals and websites for access, and metadata locator and classification tools. This wasteful overlap and duplication should cease, and these missions and functions should be consolidated into a new Public Information Resources Administration.

In its March 2000 report dealing with NTIS, the Commission indicated that more time was needed to investigate carefully the pros and cons, and the benefits and costs of alternative solutions to the "NTIS matter." Eleven different alternatives were then considered, including:

- Retaining NTIS in the Department of Commerce;
- Transferring collections and service responsibilities to the Library of Congress as initially proposed by Commerce;
- Transferring collections and service responsibilities to the Government Printing Office;
- Transferring collections and service responsibilities to the National Archives and Records Administration;
- Establishing a new national library of science, engineering, and technology, sometimes also designated as the national library of science, energy, and technology;
- Transferring some or all of the NTIS collections and services to the National Academy of Sciences, the National Science Foundation, or the Smithsonian Institution;
- Creating a new independent agency as a service bureau to consolidate public information management functions now dispersed;
- Privatizing some NTIS activities;
- Establishing NTIS as quasi-governmental corporation;
- Transferring NTIS collections and services to a "lead host scientific and technical information intensive agency such as NASA, DOE, or DoD; and
- Transferring NTIS collections and services to the General Services Administration.

> Only one of the eleven alternatives listed above, in the Commission's view, holds out real hope for dealing with the root cause of the problem instead of dealing with the effect, and that is to create a new independent agency in the Executive Branch as a service bureau to consolidate government-wide public information resources management missions, functions, and programs. Not only would the new independent agency have overall policy leadership responsibility over the government's public information resources dissemination programs, but it would also be the federal government's staunch advocate for explaining, advancing, and diffusing government knowledge holdings as a strategic national asset.

Since the Commission's initial investigations, a number of other closely related proposals have been to study similar alternatives, not for NTIS, but for the transfer of the Superintendent of Documents functions in the Government Printing Office to the Library of Congress. During the FY 2001 budget hearings, the Appropriations Committees' Conference conferees directed GAO to study such a transfer. Moreover, Congressmen Moran and Davis, and Congresswoman Morella, directed GAO to study NTIS operations in greater depth. Both these studies are still underway as we go to press with this report. It is hoped that the General Accounting Office (GAO) will take the Commission's findings and recommendations into account in its current endeavor.

It seems quite apparent that the same problems that precipitated the NTIS problems in the first place are not limited to NTIS, but are endemic to all agencies with public information dissemination missions and functions, whether agencies with government-wide, central missions, or agencies with operating missions such as the cabinet departments and independent agencies.

In short, the Commission faults the rationale that would lead to a "solution" of the problems by one such agency (e.g. NTIS), when, in fact, a different solution is left in place for another agency (e.g. GPO, USGS, the Census Bureau, and so on). The statutorily authorized sales policies, the statutorily authorized revenue policies, and the statutorily authorized charging policies for all agencies should be reasonably consistent, albeit taking into account some exceptions.

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With respect to the Government Printing Office (GPO) and the Federal Depository Library Program (FDLP), a new vision and a new service model are needed.

> What is needed is a new vision, and a new Internet Age business model to replace the traditional depository library program, and one in which the role of the government documents librarian is more fully expanded and exploited to help citizens diagnose their information problems and help them learn how to use the information they have found more effectively in applying that information to help them cope with their personal, family, job-related, and other challenges.

In the long run, the importance of the Federal Depository Library Program as it is currently constituted, based largely on tangible government information products, might be expected to decline as more and more government content becomes available on the Web and as the Web becomes more accessible to more and more people, the need to physically travel to a depository library to physically search for and access tangible government documents is replaced by remote access using computers and modems to government information on the Web.

The full realization of this vision of the transition from a fully or partially tangible product program to a virtual program where the great bulk of government information products are in electronic form, is still a very long way off. Congress should not take the growth of the Web and the increasing amount of government content available on the Web as a signal to cut appropriations to the Federal Depository Library Program. For many years to come, neither will substantial numbers of important government documents yet be available in electronic form on the Web, nor will many citizens will not have ready access to the Web be able to find and retrieve them.

What is needed is a new vision, and a new Internet Age business model to replace the traditional depository library program, and one in which the role of the government documents librarian is more fully expanded and exploited to help citizens diagnose their information problems and help them learn how to use the information they have found more effectively in applying that information to help them cope with their personal, family, job-related, and other challenges.

The Federal Depository Library Program (FDLP) is well positioned to expand its collections and services from so-called tangible information products to digital publications distributed over the Internet directly to the depository libraries. Most depository libraries have adapted rapidly to the changes in the program and their services to the public have kept pace with the expanded volume of digital materials. The current FDLP should immediately include such items for selection by depository libraries and ensure their delivery to the libraries prefer affirmative dissemination to access. The proposed Public Information Resources Administration (PIRA) should have as its foundation the active dissemination of digital publications to widely distributed, locally based and maintained digital

library collections of federal depository libraries in exchange for their continued commitment to no-fee public access to the materials received or accessed.

In a digital age of instant access over the Internet, there are still good reasons for establishing and maintaining the dissemination of electronic government information to depository libraries, even while the federal government provides services for the same materials. Among these are:

- It provides a non-federal government infrastructure for preservation and access, apart from the federal government infrastructure. This will protect access and preservation regardless of future changes in policy, mission and funding of federal agencies.
- It will result in multiple, specialized collections in the depository library community. Each library, by addressing the needs of its own community (whether or not that is a geographically local community, as it has been historically been, or a virtual community of users with common interests) will be able to select, organize, preserve and provide access to that information that is most important to its community. This will provide better access that a government-centered collection that contains only government information, by providing many different user-centered collections and presentations of government information. In addition, libraries can continue to integrate and provide their collections of federal government information along with other types of government information (foreign, state, local, tribal, etc.), private sector publications and value-added products. Decisions about the value of particular publications and about the preservation of free access to those publications can then reside with the local communities of interest, regardless of decisions made at the federal level.
- It can be implemented immediately without additional legislation or funding and can provide a foundation on which the changes that the Commission recommends can be built. The FDLP exists today and has no-fee public access to federal government information as its primary mission. In the event that the proposed legislation to establish a Public Information Resources Administration (PIRA) is not passed quickly, or is significantly altered or inadequately funded, the dissemination of digital publications to depository libraries would provide much more assurance of permanent public access than exists today.
- It fulfills the requirement of Section 3506(d)(1)(A) of the of the Paperwork Reduction Act that agencies shall "(1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through (A) encouraging a diversity of public and private sources for information based on government public information."

7. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

The government should not abandon the need for a central STI policy and oversight agency in the Executive Branch because of past difficulties. It cannot be a surprise that the combination of events described in the Findings section above— lower report input, competition with free agency websites, loss of appropriated funds, aggressive entrepreneurial zeal with perhaps inappropriate business arrangements -– led to financial and other difficulties for NTIS. However, it does not follow that the government should therefore abandon the notion of a central source for government technical information charged with making this information accessible to the Public.

The NTIS mission in the Internet age should have four primary components:

- The collection and processing of government scientific, technical, and engineering information so that it can be made accessible to the public including facilitating access to the information on government websites;
- The sale of this information to the public in print, microfiche and electronic form;
- Related services to other government agencies on a cost reimbursable basis; and
- Value-added information services provided by NTIS itself or by NTIS in conjunction with private sector information vendors.

The last point is potentially the most controversial because it is here that the potential lies for conflict and competition with the private sector. Value-added services would seem to be appropriate when the service is directly related to the dissemination of information, or a natural outgrowth of, activities that NTIS would normally perform in furtherance of its own mission, such as disseminating an agency's database or delivering specific information products to an agency's customers.

The "new" business model for NTIS recommended by the Commission is a return to the earlier model with a mix of appropriated funds for input processing, sales income from report and publication and subscription sales and reimbursable funds for services provided to other agencies.

Some of the functions performed by NTIS benefit the people of the United States and government agencies as a whole. These are the functions that make the results of government funded research and other NTIS publications accessible to the public. They include the functions of processing information into the NTIS collection and maintaining a searchable archive of government information for public access. These functions, which benefit the public at large and permit public access to government information, are properly supported with public funds, i.e., appropriations.

When the DOD processes a research report of Defense funded research into its system and mounts it on its Web server for Defense community and public access all of the costs are taxpayer funded. The Department of Transportation recently received a $250,000 appropriation expressly for the purpose of mounting Transportation Department reports on a Web server for public access.[96] Even the Department of Commerce, when it mounted its two policy reports mentioned in its "Fact Sheet" referred to in the earlier section of this paper, used taxpayer funds to pay for the preparation, processing, mounting and public availability of the reports. Why should providing public access to reports at DOD, Transportation and Commerce be a taxpayer-funded public good while providing the same access to the same reports via NTIS require user charges? At present, unlike GPO, Library of Congress, DOD, Transportation or Commerce, NTIS is required to fund these same "public good" operations from sales receipts and, surprise, prices are high and there is not enough money to fund the entire operation when sales turn down. The consequence of this approach to funding is the inevitable development of shortsighted recommendations to close down the money losing operation when the real problem is with the business model.

The government has the responsibility to insure that the public has adequate access to the government reports and publications collected by NTIS from originating agencies. This responsibility cannot be met by shifting it to mission agencies that do not have public information distribution or economic growth missions. Nor can it be met—and the funding saved—by transferring the responsibility to other central information repositories, which would require essentially the same level of funding to perform the same tasks. The government's continuing responsibility to provide public access to government information carries with it a responsibility to properly fund the dissemination operation.

[96] DOT Gives Users Free Ride to Online Research", *Government Computer News*, April 3, 2000, page 13, at http://www.gcn.com/vol19no7/news/1630-1.html.

That is why the Commission will formally advocate an information dissemination budget as part of the President's budget.[97]

This is not to say that specific users should not pay the incremental cost of specific access that is not normally provided and that incurs extraordinary costs. They should, but in today's Internet world, normally free access is likely to mean Web access, which can be provided by the government at negligible incremental cost for each additional user.

The specific operations, which benefit the general public and should be funded with appropriated funds, are:

- Collection or acquisition of reports;
- The indexing, abstracting and cataloging of these reports;
- The further processing of reports into the NTIS collection by scanning, microfiching and archiving;
- The creation and maintenance of the NTIS database which provides searching and locating information for this report collection including the maintenance of a PURL system to maintain accessibility to reports on agency websites;
- The mounting and maintaining of the searchable NTIS database on a website for free public access;
- The mounting of the full text of the reports—to the extent they are not available on agency servers—on NTIS servers for free public access; and
- The maintenance of archive files to insure permanent, but not necessarily free, public access to material not otherwise available.

These functions would cost an estimated $5 million per year in ongoing operating costs and would permit NTIS to operate effectively independently of the vagaries of future report input or demand.[98] There will also be some one-time startup costs to establish the new system. These costs are on the order of $1.7 million. NTIS estimates for performing these tasks are shown in Appendix 2 to the Panel One Report (Appendix 17). Note that periodic updating and replacement of IT hardware, possibly every five years, is not included in the recurring cost estimate in Appendix 2 to the Panel One Report.

If the functions of NTIS were transferred to the Library of Congress as proposed by the Department of Commerce, or to the Superintendent of Documents in the Government Printing Office, to NARA, or anywhere else, essentially the same "public good" costs would be incurred and the same appropriation for these functions would be required. The Commission made this point in its September 2000 letter to the Secretary of Commerce, strongly suggesting that direct-hire full time hiring authority be reinstated in order to bring the agency up to a satisfactory staffing and service level, and avoid the danger of the agency falling below that satisfactory level.

In contrast to the inherently governmental responsibilities that the Commission recommends be paid for with appropriated funds, the functions of NTIS, such as the distribution of print or microfiche copies of reports in response to individual orders or through subscription services, which benefit only the specific individuals who make use of these NTIS services and incur specific, measurable, costs for

[97] The information dissemination budget is in Recommendation 4.
[98] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

each additional user, should be paid for directly by the user who benefits through a user charge that recovers the incremental cost of the product or service distributed.

Moreover, the work performed by NTIS for other agencies would also be reimbursed on the basis of costs actually incurred.

If the changes contemplated in this report are accepted by the President and the Congress, then even though NTIS document sales income could be expected to fall dramatically as more and more content is made available on the Web, since document sales income would only be used to pay the actual costs of document distribution and not the cost of processing documents or maintaining the PURL system, it should be relatively simple to manage the operation without the kinds of deficiency problems faced in the past. Without those financial pressures, the financial instability would disappear, much of the aggressive entrepreneurial zeal that led to aggressive competition with the GPO and possible questionable partnerships would be reduced. The result would be a stable NTIS cooperating with the publication-originating agencies and the other centralized information distribution centers to provide ongoing public access to government information on the most economical basis.

8. CONCLUSIONS RELATING TO FEDERAL GOVERNMENT INTERAGENCY GROUPS (E.G. THE CIO COUNCIL, FEDERAL WEBMASTERS FORUM, CENDI, ETC.)

> More often than not, the most knowledgeable official for a particular public information product may not even be in one of the central agency staff offices, but, rather, way down in a subordinate operating sub-unit in an program area, at the bureau, division, branch, or even lower level, but the mechanisms for identifying, harnessing and mobilizing all of this expertise are too often deficient. The situation cries out for closer agency coordination and control. Oftentimes there is not even an "IRM committee" that is agency-wide, to advise the CIO.

It is evident that while responsibility for public information dissemination is *nominally* vested in agency chief information officers pursuant to the Paperwork Reduction Reauthorization Act of 1995, and the Stevenson-Wydler Act, responsibility is, in fact, decentralized and splintered among a wide variety of agency central staff and operating program sub-unit offices within individual agencies. For example, the following central agency staff offices are all intimately involved in one way or another, at some stage in public information dissemination:

- Public Affairs office;
- Printing and Publishing activities;
- Information Technology staffs;
- Libraries, Information Centers, Clearinghouses and Referral Offices;
- Webmasters;
- Records and Archives staffs;
- Statistical/Reporting staffs;
- Legislative Liaison offices; and
- FOIA and Privacy staffs, including Reading Room staff.

Moreover, more often than not, the most knowledgeable official for a particular public information product may not even be in one of the central agency staff offices, but, rather, way down in a subordinate operating sub-unit in an program area, at the bureau, division, branch, or even lower level, but the mechanisms for identifying, harnessing and mobilizing all of this expertise are too often deficient. The situation cries out for closer agency coordination and control. Oftentimes there is not even an "IRM committee" that is agency-wide, to advise the CIO.

The newness of the CIO position in agencies (only a few years old), coupled with the newness of the incumbents appointed to those agencies, compounds the problem of coordination and control because these individuals are so new to their jobs. Sometimes even when a CIO has been on the job for a relatively long period (i.e. 18 months or longer), s/he is reluctant to "do battle" with peers because of ignorance of agency culture and 'ways of doing business.'

9. CONCLUSIONS RELATING TO STATE, LOCAL, AND TRIBAL LEVELS OF GOVERNMENT

Distinctions can and should be made in public information resources regarding the scope and applicability of holdings as to whether they are all government, federal only, state only, tribal only, or some permutation of these categories

FirstGov is an example of the critical need to make these governmental level distinctions.

10. CONCLUSIONS RELATING TO THE COMMERCIAL (FOR PROFIT) SECTOR

The American public's access to government information needs has traditionally been best served through multiple, non-exclusive program and delivery channels provided by both the public and the private sectors so as to reach the widest possible public audiences, and meet the most diverse and specialized kinds of information needs. Neither sector can meet fully the totality of all public user needs for government information, nor should they even if they could.

Moreover, users who are clienteles of a given agency (or perhaps even a few different agencies because of overlapping subject matter) develop a certain kinship and affiliation for "their" agencies. That is fine and natural, and is as it should be, but it is another reason why diverse and multiple channels are essential to a democracy.

If the NTIS mission were to disappear, those corporations that have come to regard their information deposited with NTIS as a de facto archive, would have to go to considerable expense to establish and maintain their own archives.

11. CONCLUSIONS RELATING TO THE NOT-FOR-PROFIT SECTOR, INCLUDING PROFESSIONAL ASSOCIATIONS

The Library Services and Technology Act (LSTA) program is an excellent financing mechanism, already in place and operating well, to utilize for helping to fund the education and training of librarians and other information professionals in order to upgrade the level and quality of their skills and expertise needed to help train other information professionals, user groups, and the public. A variety of grant program offerings provides considerable flexibility for designing a program for this

purpose. The Commission should work with the Institute for Museum and Library Services (IMLS), and other appropriate governmental and non-governmental bodies (e.g. the professional societies, and professional education and training associations) for this purpose.

The sort of arrangement entered into by the GPO, the State Department, and the University of Illinois at Chicago with respect to the latter institution providing various services to the public and the government with respect to foreign affairs materials, should be emulated more broadly across mission agency lines to other sectors, including, for example, the environment, energy, space, defense, and others.

12. CONCLUSIONS RELATING TO OTHER AREAS, INCLUDING INTERNATIONAL INFORMATION POLICY

If the United States rejoins UNESCO that forum should be explored as a suitable venue for the U.S. to pro-actively helping other countries, especially developing countries, learn how to organize, disseminate, and more generally exploit the notion of regarding public sector information as a strategic national resource. Meanwhile, the Commission, in collaboration with the Department of Education, and other stakeholders, is working with the National Forum on Information Literacy to prepare for the first international congress for information literacy.

F. RECOMMENDATIONS

The concept of public information dissemination should be formally recognized by the United States as a strategic national resource. To provide the necessary statutory foundation and other mechanisms necessary to achieve the goals and objectives of this new public information resources national mission, the Commission has thirteen *strategic* recommendations and a variety of other, more general, recommendations.

STRATEGIC RECOMMENDATIONS

1. **The United States Government should formally recognize and affirm the concept that public information is a strategic national resource; the President should issue an Executive Order or Memorandum to the Heads of Executive Departments and Agencies emphasizing the importance of agency proactive initiatives in making their information resources more effectively and efficiently available to, and permanently accessible by all Americans, including those who are disabled or disadvantaged; the President and the Congress should ensure that this concept is reflected in all appropriate legislative, policy, budgetary and other contexts.**

The United States Government should formally recognize and affirm the concept that public information is a strategic national resource. To accomplish this, the President should issue an Executive Order or a Memorandum to the Heads of Executive Departments and Agencies formally designating the government's knowledge holdings as a strategic national asset and emphasizing the importance of agency proactive initiatives in making their information resources more effectively and efficiently available to, and permanently accessible by all Americans, including those who are disabled or disadvantaged. The President and the Congress should ensure that this concept is reflected in appropriate legislative, policy, budgetary and other contexts.

The Commission has determined that there is an absence of an accountability focus for the policy leadership, management and oversight of public information resources as a strategic national asset. To this end, the Commission has drafted such an instrument,[99] as well as proposed legislation for a Public Information Resources Reform Act of 2001,[100] which along with its other recommendations suggest means to respond effectively to this challenge.

2. The Congress should authorize, and the President should establish, a new independent agency in the Executive Branch, the Public Information Resources Administration (PIRA), to provide overall policy leadership, management, oversight, and accountability for public information resources; both new authorities and responsibilities, and transfers of existing authorities and responsibilities from extant government entities are required.

The Congress should authorize, and the President should establish, a new independent agency in the Executive Branch, the Public Information Resources Administration (PIRA). The President should announce the creation of the new agency, stressing the importance the Administration places on making agency information holdings more easily available to and accessible by the public on a permanent basis. For this purpose the President may use the above mentioned Executive Order or some other instrument.

Following enactment of the proposed legislation, and pursuant to the enabling statutory authority, the Congress and the President should take the necessary steps to establish a new independent agency in the Executive Branch, the Public Information Resources Administration (PIRA). The absence of a clear, single, central focal point within the government for the policy leadership, public information resources planning and programming, cross-platform information handling and interchange standards and guidelines development, and enforced use, intergovernmental and interagency sharing of federally created information resources, and management of public information resources, is contributing to:

- unnecessary and wasteful overlap and duplication of government-wide information services and information management missions, roles, and functions that are now fragmented, compartmentalized and dispersed all over government;
- the loss of important information, formal or fugitive electronic government information products, because there is no single, authoritative backup ("failsafe") electronic depository for government information products that agencies post on their web sites;[101]
- inadequate attention to the special public information needs of disadvantaged and disabled Americans;
- the difficulty of inter-branch, intergovernmental, and interagency sharing of government information, and the lack of a federal information infrastructure which can be linked effectively to state, local, and tribal government public information infrastructures; and
- a serious lack of coordination in public information storage, communication and handling policies, programs, standards, guidelines and practices that is hampering information preservation and storage, communication and interchange between government and public users, and the efficient

[99] A draft proposed Executive Order is available in Appendix 29.
[100] This proposal is in Recommendation 5.
[101] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA) have centralized information programs, but even these programs do not capture all public information resources relevant to their missions.

and effective interchange of public information between platforms, systems, and networks because of inadequate locator and other metadata tools and controls.

3. **The Congress and the President should ensure that there is a standard paragraph in every agency's mission statement identifying public information dissemination as a primary responsibility; the Congress should ensure through its oversight responsibilities that revised missions, once promulgated, are reflected in agency plans, budgets, programs, and performance, and should amend agency and program authorization to identify public information dissemination as a primary responsibility; the cost of disseminating information to the public must be considered an essential, integral and direct cost of an agency's doing business (not an overhead cost or financed through user fees), as reflected in procurement and contracting regulations, the annual budget process as prescribed by OMB Circular A-11, and in other contexts;**

The cost of disseminating government information to the public should be explicitly identified in agency budgets as a direct cost (not an overhead cost). Too often disseminating information to the public is viewed as a by-product of other, more important agency business, or subsumed in agency overhead calculations, and yet, disseminating government information to the public should be considered an essential and integral cost of the agency's doing business. Therefore, the Congress and the President should ensure that there is a standard paragraph in every agency's mission statement identifying public information dissemination as a primary responsibility, and the cost of disseminating information to the public must be considered an essential, integral and direct cost of an agency's doing business (not an overhead cost or financed through user fees), as reflected in procurement and contracting regulations, the annual budget process as prescribed by OMB Circular A-11, and in other contexts.

The Internet provides an unparalleled opportunity to adjust traditional incentives and disincentives with respect to motivating agencies to maximize rather than minimize their information flows to the public. Agencies are now able to reach out to all citizens in a far more effective manner, and are motivated to do so. Not only are the incentives enhanced, but also the disincentives to withhold information are reduced. Moreover, to the extent that individual agencies are successful in disseminating their own information directly, the burdens on and the costs to central information service agencies are correspondingly reduced, but redundancy is still absolutely essential as a safeguard.

4. **The President should require an Information Dissemination Budget line item at the individual agency level and establish an overall Information Dissemination Budget line item in the President's Budget that aggregates individual agency requirements with those of the new Public Information Resources Administration (PIRA); this budget line will contain two major components—an STI component and a non-STI component; for the STI component, the Congress should enact legislation that automatically reserves at least three one-hundredths of one percent (.03%) of all funds appropriated for research, development, and comparable government and government-funded activities; this reserve would be a minimal reduction of the funds available for R&D, but it would ensure that a minimum of $300,000 was available for identification, acquisition, cataloging, indexing, and dissemination of research and development results for every $1 billion expended on the research.**

The government employs an "Information Collection Budget" line item to keep control of otherwise burgeoning agency collections of information from the public, businesses, lower levels of government, and so forth. The President should require an "Information Dissemination Budget" (IDB) line item as

well, in order to ensure that individual agency efforts, and the overall government effort, to maximize the dissemination of information to the public, are clearly identified and statutorily guaranteed. This approach would minimize mission agency fears that the Congress would cut their budgets because they have strayed too far from utilizing their appropriations for information dissemination purposes not directly related to their primary missions.[102] To this end, two levels of IDBs are required, one at the individual agency level, and an overall IDB in the President's Budget that aggregates individual agency information dissemination requirements with those of the new Public Information Resources Administration (PIRA).

To help fund this budgetary line item, the Congress should enact legislation that automatically sets aside at least three one-hundredths of one percent (.03%) of all funds appropriated for research, development, and comparable government and government-funded activities, to fund the STI component of the Information Collection Budget, including the relevant public good functions currently performed by the National Technical Information Service (NTIS) and the Government Printing Office (GPO). This reserve would be a miniscule reduction of the funds available for R&D, but it would ensure that a minimum of $300,000 was available for identification, acquisition, cataloging, indexing, and dissemination of research and development results for every $1 billion expended on the research. Based on the current FY 2001 proposed government expenditures of approximately $85 billion for R&D, the reserve would make available at least $25.5 million to finance direct agency public information dissemination programs and the relevant public good functions currently performed by the National Technical Information Service (NTIS) and the Government Printing Office (GPO).[103]

Once established, the Public Information Resources Administration (PIRA) will estimate its own budgetary requirements, and review those of other Executive Branch agencies. All of those requirements will be included in the overall IDB. The portion of PIRA requirements not funded by the .03% reserve from R&D budgets, or through its statutorily authorized information sales programs, will still require direct appropriations. Until PIRA is created, funding for the relevant public good functions of the National Technical Information Service (NTIS) and the portions of the Superintendent of Documents' expenses that are related to the identification, acquisition, cataloging and organization, as well as the dissemination of the results of federally funded R&D through the Federal Depository Library Program (FDLP), should be financed through the funds reserved from the R&D appropriations. However, this will not eliminate the requirements for appropriated funds to support and sustain the FDLP and other channels for dissemination of public information not generated through federally funded R&D.

The Commission fully realizes that estimating a minimum IDB budgetary floor, at this stage, is hazardous because agencies have never prepared such budgets and neither the Office of Management and Budget (OMB), nor the Congressional Budget Office (CBO) have, as yet, any experience in making such estimates. Until they do, there is no reliable statistical precedence available for budget estimation purposes. Moreover, although the figure of $4.5 million was utilized in the Commission's earlier NTIS report as a “reasonable estimate” for defraying the public good functions that should be

[102] This issue is also discussed under Finding 1.A.

[103] For example, the Defense Technical Information Center (DTIC), the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA) all identify, collect, abstract, index and either scan or microfilm reports for their own agency missions that are eligible for public information dissemination. They then transfer the abstracting and indexing records, and in some cases, copies of the documents themselves, to NTIS for public availability, which right now means sale. If this effort was not performed by DTIC, DOE and NASA, it would have to be performed by NTIS in order to make these materials available to the public; therefore, the public good functions of collecting, abstracting, indexing, and scanning or microfilming of these public information resources, in so far as they are related to the results of federally funded R&D, could and should be funded through the reserve.

financed through appropriated funds for STI information, that does not necessarily mean that a proportionate amount would be required for the non-STI public information dissemination activities. That figure could well, proportionally, be higher, or lower. The Commission's $25.5 million estimate for public dissemination of STI is, indeed, a very preliminary and minimum estimate. A more accurate estimate of the STI costs and identification of the probable costs for dissemination of non-STI public information resources most certainly need to be more carefully developed by OMB and the CBO before consideration by the appropriations committees of the Congress.

There is also the need to recognize and preserve existing budgetary authority that is utilized to defray the statutorily authorized costs of mission agency public information dissemination programs to ensure that the portions of existing agency budgets utilized for public information dissemination are appropriately reflected in the agency IDB. This will also ensure that there is no "double counting" between amounts appropriated to the mission agencies on the one hand and the amounts appropriated to a central information services agency, such as PIRA, on the other. Where an agency already has explicit statutory authority enabling it to disseminate its information to the public, the Commission recommends that budgetary authority remain in place and continue. Those amounts, most assuredly, should not be considered as "budgetary trade-offs or offsets" against the PIRA budget.

5. The President and the Congress should review, refine and modify the draft legislation proposed by the Commission, the Public Information Resources Reform Act of 2001, and the Congress should enact, and the President should approve, the legislation in the 107th Congress.

The Commission has drafted a proposed bill, the Public Information Resources Reform Act of 2001 *to provide a new statutory foundation for the formal establishment of government's knowledge holdings as a strategic national asset.*[104] The draft bill is an expanded outline of key provisions, but is not a complete bill. It is fully recognized that both the new President and the new Congress will need to examine the detailed provisions of the bill very carefully, and make whatever modifications they believe necessary. The Commission's thought in preparing a draft was to simply facilitate this process and provide a catalyst for discussion and action.

Such a bill could be introduced as early as in the First Session of the 107th Congress. The Senate Committee on Governmental Affairs, and the House Committee on Government Reform, because they have paramount jurisdiction over government information matters, should take the lead in reviewing the proposed draft, modifying it as necessary, and eventually sponsoring a revised bill in their respective Houses. Because of their keen interest in the matter, the Senate Committee on Commerce, Science, and Transportation, and the House Committee on Science should also play a key leadership role. Undoubtedly the Appropriations Committees of both Houses will also be keenly interested, as will the Senate Committee on Rules and Administration and the House Committee on House Administration.

6. The Congress should establish a new office, the Congressional Information Resources Office (CIRO), with appropriate authorities, functions, funding, and programs necessary to support the full range of Legislative Branch public information resources management responsibilities; the CIRO should incorporate the Government Printing Office responsibilities for Legislative Branch printing and related publishing services, whether performed directly or procured; and the Congress should extend key provisions of the Paperwork Reduction Act, notably Section 3506(d) to the Legislative and Judicial Branches.

[104] The proposed legislation is available in Appendix 21.

The Legislative Branch should also establish a new office, the Congressional Information Resources Management Office (CIRO). This new entity should have authorities, functions, and programs necessary to support the full range of Legislative Branch public information resources management responsibilities, throughout the entire legislative information life cycle. The new office would provide overall policy leadership, oversight, and accountability for the Legislative Branch's public information resources programs and have new responsibilities for working with the Clerk of the House, Secretary of the Senate, and the heads of other Legislative Branch offices to ensure that information resources management principles and practices are diffused more widely throughout the entire Legislative information life cycle.

The Government Printing Office (GPO) is a long-established institution that has served the nation extremely well. However, a new vision and business model appropriate to the Internet Age are now needed. Incorporation of GPO into a new CIRO will streamline, simplify, and modernize the mission of that organization, so that it can continue to support printing and related publishing services, whether performed directly or procured, to meet the needs of the Congress and the Legislative Branch.

The scope of the Paperwork Reduction Act of 1995 currently applies only to the Executive Branch. However, several key sections, notably Section 3506(d), *could usefully be extended to the Legislative and Judicial Branches as well*. Section 3506(d) of the Paperwork Reduction Reauthorization Act of 1995 states:

> (d) With respect to information dissemination, each agency shall -
>
> (1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through
> (A) encouraging a diversity of public and private sources for information based on government public information;
> (B) in cases in which the agency provides public information maintained in electronic format, providing timely and equitable access to the underlying data (in whole or in part); and
> (C) agency dissemination of public information in an efficient, effective, and economical manner;
>
> (2) regularly solicit and consider public input on the agency's information dissemination activities;
>
> (3) provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products; and
>
> (4) not, except where specifically authorized by statute -
> (A) establish an exclusive, restricted, or other distribution arrangement that interferes with timely and equitable availability of public information to the public;
> (B) restrict or regulate the use, resale, or redissemination of public information by the public;
> (C) charge fees or royalties for resale or redissemination of public information; or
> (D) establish user fees for public information that exceed the cost of dissemination.

Commenting on the proposed report, James Jacobs, data services librarian at the University of California, San Diego, suggested that Section 3506(d)(1)(C) of the Paperwork Reduction Act could be amended to say "agency dissemination of public information in an efficient, effective, and economical manner, including deposit of publications with depository libraries through the FDLP or its successors."

7. The Judicial Branch should establish a new office, the Judicial Information Resources Office (JIRO), in the Administrative Office of the U.S. Courts, with comparable authorities, functions, funding, and programs necessary to support the full range of Judicial Branch public information resources management responsibilities, including procurement of printing and related publishing services.

Similar to the foregoing recommendation with respect to the Legislative Branch, the Judicial Branch should also establish a new office, the Judicial Information Resources Management Office (JIRO), in the Administrative Office of the U.S. Courts. This new entity should have comparable authorities, functions, and programs necessary to support the full range of Judicial Branch public information resources management responsibilities, throughout the entire judicial information life cycle. The new office would provide overall policy leadership, oversight, and accountability for the Judicial Branch's overall public information resources programs and have new responsibilities for working with the Clerk of the Supreme Court and other Judicial Branch offices to ensure that information resources management principles and practices are diffused more widely throughout the entire Judicial information life cycle.

8. State, local, and tribal levels of government should consider establishing comparable public information resources planning, management, and control machinery as that contemplated by this report, but tailored to their unique requirements and circumstances.

State, local, and tribal levels of government should consider establishing comparable public information resources planning, management, and control machinery as that contemplated by this Report, but tailored and customized to their own unique requirements and circumstances. Lower levels of government should be encouraged to formally designate their respective knowledge holdings as strategic assets and take appropriate actions to implement that designation, so that it is not regarded just as an exhortation, but has practical value and utility as manifested by operational programs, policies, and practices

9. The NTIS information collection, editing and related tasks are inherently governmental in nature and should be funded by Congress with appropriated funds.

Beginning in FY 2001, the National Technical Information Service (NTIS), wherever it may be located, should receive appropriated funds to cover its "public good" activities related to the acquisition, organization, and preservation of scientific and technical information for public access because those activities are inherently governmental in nature. *NTIS should not be required to recover the costs of those activities from sales income*. These "public good" operations include the functions necessary to ensure that NTIS reports are *permanently accessible to the public.* These functions include:

- collection or acquisition of reports;
- indexing, abstracting, and cataloging of these reports;

- further processing of reports into the NTIS collection by scanning, microfilming, and archiving;
- creation and maintenance of the NTIS database which provides searching and locating information for this report collection, including the maintenance of a uniform locator system to maintain accessibility to reports on agency web sites;
- mounting and maintaining of the searchable NTIS database on a web site for free public access;
- mounting of the full text of the reports—to the extent that they are not available on agency servers —on NTIS servers for free public access; and
- maintenance of its collection to insure permanent, but not necessarily cost-free, public access to historical material not otherwise available.[105]

In its March 2000 preliminary assessment report to the President and the Congress on NTIS, the Commission recommended the currently estimated annual appropriation sufficient to defray these inherently governmental activities to be $5 million per year.[106]

Recommendation 4 to establish an information dissemination budget mechanism implicitly recognizes the inherently governmental functions of NTIS and provides it with a clearly identifiable budgetary line item to give it "force and effect."

10. The NTIS mission and functions are fundamentally sound even though the agency's business model needs to be changed; the agency should remain in the Department of Commerce, operating at a satisfactory level of staffing and service, until such time as it is transferred to the proposed new Public Information Resources Management Administration (PIRA).

The President and the Congress should reject the August 1999 proposal made by the Department of Commerce to close NTIS and transfer its authorities, collections, and resources to the Library of Congress. Instead, NTIS should remain in operation in the Department of Commerce, empowered to perform at a satisfactory level of service and staffing, until such time as it's mission and functions are transferred into the proposed new Public Information Resources Administration (PIRA).

Commerce should make the necessary adjustments in its FY 2001, and subsequent fiscal year budgets relating to NTIS, so long as that agency remains in the Department, to change the NTIS financing plan in accordance with the mix of revenue requirements recommended below. Commerce should also ensure that as soon as the Congress authorizes the use of appropriated funds, NTIS change its business model as recommended below.

11. The NTIS business model should be updated and revenues should be derived from a mixture of three sources: appropriated funds, sales income, and reimbursements from other agencies for services provided; charging policies need also to be simultaneously modified.

The updated proposed NTIS business model should include a mix of three sources of revenue:

- appropriated funds;

[105] As is discussed elsewhere in this report, the collection of information for permanent public access is distinct and separate from the responsibility of the originating agency to schedule an official record copy of each of its reports and other information products for disposition and possible transfer to the National Archives and Records Administration (NARA) for "permanent records retention" under the Federal Records Act.

[106] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

- sales income; and
- reimbursements from other agencies for services provided.

Other key elements of the revised business model are:

- NTIS should not charge royalties or impose copyright-like restrictions for products or services it provides;
- charges for report copies, regardless of medium or format, should be based on the incremental cost of providing the copies; and
- NTIS products and services, other than the retrospective report collection, must be available to the public through the Federal Depository Library Program.

The cost of providing access to and delivering older reports will oftentimes be higher than the cost of providing and delivering current reports because of format and medium conversions and other special information handling requirements. This cost should be recovered through the pricing for such reports.

12. Public and private sector partnerships should be strengthened, extended, and expanded where the private sector can serve as the government's agent in a wide variety of roles, as information provider or information value-adder.

In this context, the private sector means entities other than the government itself. This includes both for-profit and not-for-profit organizations, such as academic and public libraries, professional societies and trade associations, hybrids that are joint government/private enterprise, and commercial enterprises. Organizations such as these continue to play a crucial role by partnering with the government to enhance and enrich the production, organization, searchability, access to, and dissemination of government information. In the Commission's view, government has an affirmative obligation to facilitate a multiplicity and a diversity of sources and roles for gaining access to and disseminating government information. Even if government could handle this total responsibility alone (which it cannot) the public and private sectors working together in a partnership will produce a far better mix of government information products and services for all citizens. However, the federal government continues to have primary responsibility for the entire life cycle of electronic government information, including the dissemination and permanent public access to government information, without restrictions, to the American public.

13. Library and information professional associations are well positioned to expand education, training, career advancement, and related professional programs to better prepare librarians to assist end users of government information; funding should be provided through grants from the Library Services and Technology Act grants programs and by other means.

The Commission will work closely with the Institute for Museum and Library Services (IMLS), various professional library and information societies[107] and others to develop a program aimed at securing grants through the Library Services and Technology Act (LSTA) authorities, for the purpose of developing training courses and modules, including online tutorials and other materials, targeted to

[107] This will include the American Library Association (ALA), the American Association of Law Libraries (AALL), the Special Libraries Association (SLA), the Association of Research Libraries (ARL), Association of College and Research Libraries (ACRL), the Chief Operating Officers of State Library Agencies (COSLA), the Urban Libraries Council (ULC), the Medical Library Association (MLA), among others.

librarians that assist end users of government information. A core of trained experts already exists for this purpose in the cadre of highly skilled government document librarians who serve the public in virtually every Congressional District in the country through the Federal Depository Library Program (FDLP). The FDLP should be given responsibility for increased training of these depository librarians and they, in turn, should assume increased responsibility for training reference and other librarians to assist the public in the effective identification and use of government information.

OTHER RECOMMENDATIONS

The Commission has identified various additional budgetary, programmatic, and technical recommendations should be implemented by the President, the Congress, the National Archives and Records Administration (NARA, the Office of Management and Budget (OMB) and other appropriate agencies and organizations to improve dissemination of, and access to, public information resources.

14. The Department of Commerce and NTIS management should take appropriate actions to implement other recommendations pertaining to NTIS

> The Commission reaffirms its recommendation made in the March 2000 report to the President and the Congress that a one-time appropriation, estimated by NTIS to be $1.6 million,[108] should be approved to defray the costs to set up a mechanism to provide free and permanent public access to current materials and future acquisitions, primarily by electronic means, through the Federal Depository Library Program.

The Panel on the Reform of the NTIS Business Model[109] recommends that the scope of the NTIS collections continue to be guided by 15 CFR 1180 to include information that relates to business and industry. The Commission does not believe NTIS' scope should be restricted to science and technology *narrowly defined*. However, the scope should *not* include general public information that does not have a strong and direct relationship with business, industry or technology. The primary focus of NTIS should be on its statutory mission to disseminate scientific and technical information (STI), and it should not be distracted from that mission by its efforts to find sources of revenue. In its efforts to find revenue to support its operations, NTIS has expanded the scope of its coverage well beyond its primary mission, and even beyond the expanded mission described in 15 CFR 1180.[110]

The Commission agrees with the Panel that NTIS should continue to sell report copies in paper, microfiche and electronic medium formats, as long as the demand for a particular format or medium justifies continuing its use.

The Panel made a number of technical recommendations related to NTIS operations, including:

- Full Electronic Scanning. NTIS should consider changing its method of scanning of report input from image-only scanning, which has high storage and bandwidth requirements and limited utility

[108] This estimate for a one-time appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[109] Additional details are available in the report from Panel 1 in Appendix 17 and at http://www.nclis.gov/govt/assess/panel1.html.

[110] For example, the Department of Commerce has questioned NTIS' role in the dissemination of tax forms for the Internal Revenue Service (IRS), and GPO has questioned the need for NTIS to distribute the *Government Manual* and other GPO general interest "best sellers." These issues are also discussed in Finding 7.E.

on the Internet, to full electronic scanning, which permits full text searching across documents, and has lower storage and bandwidth requirements;

- Source Data Automation. NTIS should obtain full text electronic files of reports from other agencies whenever possible to avoid scanning costs;
- Pointing to Agency Websites. NTIS should provide its users with access to reports made available by other agencies on the other agency's websites by pointing from the NTIS database to the appropriate location on the other agency's site;[111]
- Persistent Uniform Resources Locator (PURL) System. NTIS should develop a Persistent Uniform Resources Locator (PURL) system and track reports within their scope that are available on other agency websites so that NTIS users can find reports on other agency sites when they are moved from site to site;[112] and
- Older Reports and Special Handling Requirements. Reports not available for free on agency sites should be made available without charge on an NTIS website whenever it is economically feasible to do so. Older reports not in electronic form would not be made available in this manner and reports that require special high cost handling could also be excluded.[113] The technology used to maintain accessibility to older, less frequently used reports, should be selected so as to minimize storage and handling costs.

The Department of Commerce should lift the hiring freeze currently imposed on NTIS to the extent necessary to permit the hiring of a sufficient number of proper qualified information professionals needed to sustain NTIS at a satisfactory level of service and staffing until such time as it is transferred to the Public Information Resources Administration. As the Commission indicated in its October 10, 2000 letter to the Commerce Department, no matter where, ultimately, NTIS is located organizationally, its functions and operations must continue. The government cannot afford to lose the skills and expertise of key NTIS staff as more and more NTIS information professionals, uncertain of their agency's future, seek opportunities in environments far less unsettled. If the agency's capabilities are allowed to gradually erode, inevitably, to a point where it will have become so dysfunctional that revitalizing it would be extremely daunting, if not impossible, then no one is the "winner"—the Department, the government, the information user, or the taxpayer.

The Commission reaffirms the recommendation made in the March 2000 report to the President and the Congress that a one-time appropriation, estimated by NTIS to be $1.6 million,[114] should be approved to defray the costs to set up a mechanism to provide free and permanent public access to current materials and future acquisitions, primarily by electronic means, through the Federal Depository Library Program. Other details of this recommendation are contained in the earlier Commission report on the proposed closure of NTIS.[115]

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[111] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

[112] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

[113] No explanation of, or justification for creating or charging for, "reports that require special high cost handling" was provided by the Panel. Such reports should be funded by the originating agency or some other means, rather than creating an exception to the policies recommend by the Commission for free public access and public sale of NTIS reports once the public good functions are funded.

[114] This estimate for a one-time appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[115] *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress*, Washington, DC: U.S. Government Printing Office, March 16, 2000; http://www.nclis.gov/govt/ntis/presiden.pdf.

15. The Congress should request the National Commission on Libraries and Information Science (NCLIS) to assess public laws with provisions for establishing and maintaining public information resources for the purpose of identifying ways to modernize and strengthen the government's overall program in the Internet age.

The Congress should request the Commission to undertake an assessment of the hundreds of laws that have been enacted since the birth of the Nation, that contain provisions for the establishment and maintenance of a public information resource. The Commission would be pleased to perform this task, but would prefer to do so with the assistance of the Congressional Research Service (CRS), the General Accounting Office (GAO) and the National Research Council. [116]

The purpose of such an assessment would be to determine how the overall existing government program could be modernized and strengthened, especially in light of the Internet Age. It should not be assumed that the existing statutory foundation for disseminating government information to the public, notably FOIA and e-FOIA, but including the Privacy Act and other Congressional and Executive guidance, is adequate because the public has many information needs that are not necessarily and fortuitously addressed by existing legislation. Diffusing government knowledge to the public depends on first identifying the public's real needs for government information without being constrained by existing laws. [117]

16. The Congress should exercise greater oversight in the context of authorization and appropriation hearings and budget reviews on the extent to which lack of enforcement of existing laws is a serious impediment to effective public information dissemination; the President should ensure that adequate attention is paid to enforcement in the context of preparation of the President's budget, in performance reviews, and in other contexts.

Realistic, statutory enforcement provisions with real consequences are needed to assure that agencies abide by requirements to disseminate and provide access to government information. Such enforcement mechanisms are important regardless of whether the requirement is a more general one, e.g., to provide such information to all members of the public, or more specific, e.g., the provisions for cataloging, indexing and no-fee public access to federal government information through the FDLP. Agencies that run afoul of the law should be subject to enforcement mechanisms with real consequences.

17. The President should direct the Office of Management and Budget (OMB), in collaboration with the new Public Information Resources Administration (PIRA), to strengthen, and institutionalize if necessary, interagency and intergovernmental cooperative efforts to promote greater intergovernmental information sharing; the President should also direct OMB to coordinate with the Legislative and Judicial Branches to seek ways to improve inter-branch information interchange and sharing.

At a minimum, OMB Circular A-130 should be amended to promote greater intergovernmental and interagency sharing of government information resources*, not just for the purpose of avoiding unnecessary proliferation of new information systems where existing systems could serve the need, which is the current rationale*, *but, at the information product level for the purpose of diffusing*

[116] The need for such an analysis is discussed in Findings 4.C and Conclusion 4.
[117] This recommendation closely relates to Recommendation 21 on the need for new research in this area.

knowledge to a far wider government agency audience. In short, for both the "negative reasons" currently cited (i.e. avoiding unnecessary systems duplication), as well as for the "positive reasons" mentioned herein (i.e. because greater diffusion of knowledge leads to a multiplier effect for obtaining greater value from information investments).

The Director of OMB should also meet with appropriate individuals in both the Judicial and Legislative Branches to identify ways to strengthen and improve inter-branch information interchange and sharing.

18. The President should direct the Office of Management and Budget, in collaboration with the new Public Information Resources Administration (PIRA), to clarify "Information Life-Cycle Planning and Management" in the next revision of OMB Circular A-130, including taking steps to design, develop, and test an integrated information life cycle management software module that would satisfy multiple information policy requirements in a systematic and comprehensive manner; the Congress should include comparable and consistent revisions in the forthcoming reauthorization of the Paperwork Reduction Act in 2001.

The term "life-cycle planning" as defined in OMB Circular A-130, and its practical applicability to agency planning and managing goals, should be strengthened to address planning for the sharing and use of information content for research and development, for decision-making, and to ensure an adequate record of governmental activities. The core idea is to put in place an integrated and synchronized software program that would satisfy multiple, diverse statutory requirements for managing and disseminating information once created. [118] Analysis, recently begun by GAO, should be carried forward to determine what is needed to ensure privacy, confidentiality, security, and authenticity as information is shared and integrated across agencies, and policies established and implemented.

19. The President should establish an interagency committee, in collaboration with the CIO Council and the new Public Information Resources Administration (PIRA), to identify and recommend how standard and consistent federal identifiers can be used to assist agencies and the public to obtain information residing in different agencies.

Access should be designed to help agencies and the public to determine compliance with the laws and regulations, and identify duplicative requirements. Such recommendations should be forwarded to the President's Management Council and GSA for use in FirstGov, the government's web portal.

20. The President should direct the Office of Management and Budget, in partnership with the CIO Council and the new Public Information Resources Administration (PIRA), to conduct a comprehensive analysis and make recommendations addressing the most efficient ways to crosswalk, coordinate, and harmonize the many state and local government uniquely assigned identification numbers.

A comprehensive analysis should be conducted and recommendations formulated as to the most efficient ways to translate, coordinate, crosswalk, and harmonize the many state and local government uniquely assigned identification numbers that are used to manage permitting, licensing, and compliance records with the corresponding federal unique identifiers**.**

[118] The White Paper on life cycle management is in Appendix 12 and available at http://www.nclis.gov/govt/assess/infolife.html.

21. The National Academy of Sciences and the National Science Foundation should coordinate the development and undertaking of an information research program to address the federal government's most critical requirements for long-term information content management needs.

An information research program should be established to address the federal government's most critical requirements for long-term information content management needs. Certainly these needs include: security (including information integrity and authenticity); privacy; data integration; and the development of scalable federal information infrastructure to improve the capability and reliability of the federal information infrastructure. Even more importantly, this research should be aimed at identifying what new government knowledge sources, services, and systems need to be developed to help the public cope more effectively with the gaps in their knowledge. Traditionally, Congress has required government to disseminate information to the public primarily as a by-product response to very specific and carefully circumscribed program areas, such as energy, the environment, safety in the workplace, and so forth. *Yet the public's information needs do not always neatly match these legislated program requirements*. This is a chicken-and-the-egg proposition. That is, which comes first, the public information need, or the legislation? The Commission believes the former should not necessarily be predicated on the latter. That is why brand new government knowledge resources need to be identified, designed, developed, and provided to the public based on a continuous monitoring process of identifying the public's needs. This recommendation closely relates to the recommendation above regarding the need for the Congress, perhaps utilizing the vehicle of the CRS, to analyze existing statutes in this context.

22. The President should direct the Office of Science and Technology Policy, in collaboration with the new Public Information Resources Administration (PIRA), to step forward to assume the role it already has in statute to provide policy guidance and oversight in the effective management of STI—and perhaps even to form a COSATI-like group, which has membership from both the public and private sectors.

Although STI is better managed than most government information, it is a critical national resource and warrants a strong central leadership to maximize resource sharing, both among government agencies and with the general public.

23. The Office of Management and Budget should specify that each data element in the reporting requirements for the Government Paperwork Elimination Act should be reported in XML.

Government Paperwork Elimination Act (GPEA), Title XVII of Public Law 105-277, promotes the use of digital signatures and the submission of reports to the federal government electronically. Attachment B, Element #4, Interagency Reporting Requirements of the OMB implementing guidance calls for "a short description of the interagency report or information dissemination product." Generic descriptions of each report and "dissemination product" are better than nothing. (By law, any "dissemination product" deemed to be "major" already should be described in GILS.) However, in order to share information efficiently and effectively across agencies, as well as with the public, each "data element' within each report or "dissemination product" will need to be identified and its characteristics should be specified. The logical time to do so is when designing the "forms" which will gather the data. The best way to avoid needless redundancies is provide for a registry of the data elements and require the agencies to consult it before establishing any new elements on any forms.

24. When seeking National Archives and Records Administration (NARA) approval to schedule or dispose of records, agencies should be required, to specify the metadata by which each of their records series will be classified.

This approach will aid in the searching and acquisition of government information, preferably on the Internet. Agencies should also be required to consult with their stakeholders concerning needed information taxonomies within the context of their annual GPRA performance plans and reports.

25. An interagency ad hoc committee should be established, in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the cost to do so.

An interagency ad hoc committee should be established, in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the cost to do so. The committee should also conduct a comprehensive analysis regarding what needs to be done to assure permanent public availability of, accessibility to, preservation of, and authentication of digital publications produced by federal agencies.

In consort with the National Information Standards Organization (NISO), the Federal Library and Information Center Committee (FLICC) and others, the committee should develop an information taxonomy for government-wide use. This is essential to portals such as First Gov and for maintaining a minimum level of consistent description for all government information resources, regardless of what other cataloging and indexing may be done for specialized purposes.[119]

The committee should ensure the development of an Information Life Cycle Management software module for use throughout the federal government that would permit the satisfying of multiple statutory information resource management requirements in a systematic, harmonized, integrated fashion so as to eliminate or minimize overlapping, duplicative, and conflicting ad hoc polices, procedures, and guidelines currently being followed.

26. The President should direct the OMB/OIRA, the CIO Council and the Federal Webmasters Forum, in collaboration with the new Public Information Resources Administration (PIRA), to develop guidelines for agency webmaster use to make distinctions regarding the availability of public information resources holdings by different government branches and levels; each of the three branches, as well as federal only, state only, local only, tribal only, or some permutation of these categories should be differentiated.

The President should direct the OMB/OIRA, the CIO Council and the Federal Webmasters Forum in collaboration with the new Public Information Resources Administration (PIRA), to develop draft guidelines for use by all agencies to assist them in making the distinction regarding the applicability of public information resource availability to all branches and levels of government, including all three branches, the federal level only, the state level only, the tribal level only, or some permutation of these. The guidelines should be submitted to the CIO Council for review and concurrence. Knowledgeable interagency committees such as CENDI, the Interagency Committee on Federal Statistics (ICFS) and the Advisory Commission on Intergovernmental Relations (ACIR) should assist it in the development of the guidelines, as well public user groups such as ADPU and ACE.

[119] There is additional discussion of this issue under Finding 6.B.

27. Strengthened partnering mechanisms are needed to ensure close coordination between the Legislative, Judicial and Executive Branches.

An effective means should be established for consultation and cooperation among the three branches of government to assure, to the greatest extent possible, that all federal government information is available to, and accessible by the public, and maintained in a cost effective manner that reduce s unnecessary overlap and duplication. Coordination of policies and procedures across the Executive, Legislative and Judicial Branches is crucial. A commitment by agency officials in each branch to share information and ideas would be advantageous to all involved in disseminating and providing access to government information.

28. Academic and other types of libraries, information services agencies, and government-wide information services agency partnering arrangements should be extended and expanded across mission agency lines wherever cost-effective and practicable.

The Commission, working closely with the government-wide information services agencies such as GPO, NARA, and the Library of Congress, and/or the new Public Information Resources Administration, if and when it is statutorily established, and various interagency committees such as CENDI and the CIO Council, should identify additional areas for collaboration between academic and other types of libraries (particularly federal depository libraries), mission agencies, and government-wide information services agencies patterned after the arrangement entered into by the University of Illinois at Chicago, the Department of State, and the Government Printing Office with respect to the selection acquisition, preservation, and archiving of certain foreign affairs materials.

29. Cooperation between the proposed Public Information Resources Administration (PIRA) and the National Archives and Records Administration (NARA) to establish uniform standards and guidelines and make it easy for agencies to provide one copy of an information product for both permanent public access and, if scheduled by NARA, permanent records retention.

> There is understandable and justifiable concern that electronic public information resources are being lost even while we are struggling to develop and implement the necessary laws, policies and standards to preserve it.

The Public Information Resources Administration (PIRA) and National Archives and Records Administration (NARA) should establish a formal relationship to ensure that standards and guidelines are established within one year of enactment of the proposed Public Information Resources Reform Act of 2001, so that an agency transferring its public information resources to PIRA for permanent public availability can by that same transfer be ensured that its obligations for permanent records retention under the Federal Records Act will be met. To accomplish this PIRA and NARA must establish and promulgate standards and guidelines for the authentication and transfer of agency public information resources to PIRA. The PIRA will ensure the permanent public availability of these public information resources, and through cooperative agreements and partnership arrangements with NARA and the originating agency, PIRA will either maintain the public information resources that NARA schedules for permanent records retention, or transfer the official record copy of those public information resources to NARA at the appropriate time and in the appropriate format. Public information resources not scheduled for permanent records retention will nevertheless be maintained by PIRA for permanent public availability. Agencies that maintain their own permanent public

availability by agreement with PIRA will be responsible for transfer of the official record copy of those public information resources to NARA at the appropriate time and in the appropriate format, if they are scheduled for permanent records retention.

The Public Printer and the Superintendent of Documents have been conducting interagency meetings on the subject of permanent public access for some time. NARA is a participant in those meetings, as are the Commission, the Library of Congress, and the other national libraries. Until the Public Information Resources Reform Act of 2001, or other relevant legislation, is enacted, these meetings should become the locus for development and implementation of government-wide guidelines and standards to ensure permanent public availability and, where appropriate, permanent records retention of electronic public information resources.

There is understandable and justifiable concern that electronic public information resources are being lost even while we are struggling to develop and implement the necessary laws, policies and standards to preserve it. Electronic publishing is widely decentralized in most agencies, making it difficult, if not impossible, to educate all of the individuals who need to know about the statutory obligations for transfer of agency information products to the Government Printing Office for the Federal Depository Library Program (FDLP), the National Technical Information Service (NTIS) and NARA. Developing a simple, cost-effective means to transfer agency public information resources once and, by so doing, fulfill all of the mandates for deposit of that information is crucial to effective compliance. There are no statutory barriers to such an effort, and intra- and interagency collaboration is essential to preserve our public information resources, both for permanent public availability and, where appropriate, for permanent records retention.

30. The Commission, working with the Department of State, the Department of Education, the National Forum on Information Literacy (NIFL), and other interested individuals and organizations, should pro-actively pursue the idea of advancing the concept of treating public sector information as a strategic national asset in other nations.

The Commission, working with the U.S. Department of State, the U.S. Department of Education, the National Forum on Information Literacy (NIFL), and other interested individuals and organizations, should pro-actively pursue the idea of advancing the concept of treating public sector information as a strategic national asset in other nations. A modest start in this direction could be a planning workshop utilizing UNESCO as the venue.

The European Union has already held the United States up as a model for public access to information in its Green Paper entitled *Public Sector Information: A Key Resource For Europe; Green Paper on Public Sector Information in the Information Society*.[120] The U.S. government can do more to make these policies known to other countries, and to the extent that the U.S. government reforms its own public information dissemination laws and policies as recommended by the Commission in this report, it can become an even better model for other countries to follow.

[120] European Commission, *Public Sector Information: A Key Resource For Europe*; *Green Paper on Public Sector Information in the Information Society* (COM(98)585final, adopted on 20 January 1999); http://europa.eu.int/ISPO/docs/policy/docs/COM(98)585/gp-intro.html.

APPENDICES

Appendices are not incorporated in this draft report, but are itemized below. Most appendices are available on the Commission website at http://www.nclis.gov/govt/assess/assess.html. Locations for individual appendices are provided where available.

APPENDIX 1. LETTER TO NCLIS CHAIRPERSON MARTHA B. GOULD FROM SENATOR JOHN MCCAIN, JUNE 12, 2000

http://www.nclis.gov/govt/assess/mccain.html

APPENDIX 2. REPLY TO SENATOR JOHN MCCAIN FROM CHAIRPERSON MARTHA B. GOULD, JUNE 27, 2000

http://www.nclis.gov/govt/assess/replymcc.html

APPENDIX 3. LETTER TO NCLIS CHAIRPERSON MARTHA B. GOULD FROM SENATOR JOSEPH I. LIEBERMAN, JULY 17, 2000

http://www.nclis.gov/govt/assess/liebermn.html

APPENDIX 4. REPLY TO SENATOR JOSEPH I. LIEBERMAN FROM CHAIRPERSON MARTHA B. GOULD, AUGUST 7, 2000

http://www.nclis.gov/govt/assess/liebresp.html

APPENDIX 5. LETTER TO SECRETARY OF COMMERCE NORMAN MINETA FROM NCLIS CHAIRPERSON MARTHA B. GOULD, AUGUST 1, 2000

http://www.nclis.gov/govt/assess/mineta1.html

APPENDIX 6. REPLY TO CHAIRPERSON MARTHA B. GOULD FROM SECRETARY MINETA, SEPTEMBER 1, 2000

http://www.nclis.gov/govt/assess/mineta.pdf

APPENDIX 7. SECOND LETTER TO SECRETARY OF COMMERCE NORMAL MINETA FROM NCLIS CHAIRPERSON MARTHA B. GOULD, OCTOBER 10, 2000

http://www.nclis.gov/govt/assess/mineta2.html

APPENDIX 8. NCLIS PRESS RELEASE, JUNE 26, 2000

http://www.nclis.gov/news/pr2000/assess1.html

APPENDIX 9. NCLIS STUDY PLAN OUTLINE, JULY 25, 2000

http://www.nclis.gov/govt/assess/planout.html

APPENDIX 10. SOME ISSUES/CONCERNS TO ADDRESS, JULY 25, 2000

http://www.nclis.gov/govt/assess/concerns.html

APPENDIX 11. SOME PARADIGMS, MYTHS, AND REALITIES

NCLIS Staff White Paper
http://www.nclis.gov/govt/assess/paradigm.html.

APPENDIX 12. INFORMATION LIFE CYCLE MANAGEMENT

NCLIS Staff White Paper
http://www.nclis.gov/govt/assess/infolife.html.

APPENDIX 13. CATEGORIES OF PUBLIC INFORMATION LAWS AND ILLUSTRATIVE EXAMPLES OF PUBLIC INFORMATION RESOURCES PROVISIONS

NCLIS Staff Paper
http://www.nclis.gov/govt/assess/statcat.html.

APPENDIX 14. NCLIS COMPREHENSIVE ASSESSMENT WEB PAGE TABLE OF CONTENTS

http://www.nclis.gov/govt/assess/assess.html

APPENDIX 15. NCLIS PRINCIPLES OF PUBLIC INFORMATION, JUNE 29, 1990

http://www.nclis.gov/info/pripubin.html

APPENDIX 16. STUDY PANELS & GROUP OF EXPERTS MEMBERSHIPS

http://www.nclis.gov/govt/assess/panelmem.html

APPENDIX 17. FINAL REPORT OF PANEL ONE, A REFORMED NTIS BUSINESS MODEL FOR THE INTERNET AGE

http://www.nclis.gov/govt/assess/panel1.html

APPENDIX 18. FINAL REPORT OF PANEL TWO, REFORMED FEDERAL AGENCY NEEDS FOR CENTRAL INFORMATION SERVICES AND INFORMATION MANAGEMENT

http://www.nclis.gov/govt/assess/panel2.html

APPENDIX 19. FINAL REPORT OF PANEL THREE, REFORMED CITIZEN, BUSINESS, LOWER LEVELS OF GOVERNMENT, LIBRARY, AND OTHER NEEDS FOR PUBLIC INFORMATION PRODUCTS AND SERVICES

http://www.nclis.gov/govt/assess/panel3.html

APPENDIX 20. FINAL REPORT OF PANEL FOUR – RENEWED AND STRENGTHENED PARTNERSHIPS BETWEEN THE PUBLIC AND PRIVATE SECTORS FOR PUBLIC INFORMATION DISSEMINATION

http://www.nclis.gov/govt/assess/panel4.html

APPENDIX 21. THE PUBLIC INFORMATION RESOURCES REFORM ACT OF 2001 (RECOMMENDED LEGISLATION)

Excerpts are available at http://www.nclis.gov/govt/assess/legisum.pdf. Two Fact Sheets are also available, one on the Federal Depository Library Program at

http://www.nclis.gov/govt/assess/fdlpfact.html, and the other on the recommended establishment of a public information resources agency in each branch of government at http://www.nclis.gov/govt/assess/branch.html.[121]

APPENDIX 22. THE PAPERWORK REDUCTION ACT REAUTHORIZATION (2001) AND OMB CIRCULAR A-130 (SUGGESTED REVISIONS)

APPENDIX 23. AN INVITED RETROSPECTIVE APPRAISAL OF THE 1982 NCLIS PUBLIC SECTOR/PRIVATE SECTOR TASK FORCE REPORT

Written by Robert M. Hayes, Member, NCLIS Group of Experts
http://www.nclis.gov/govt/assess/hayes.html.

APPENDIX 24. THE WORLD WIDE LIBRARY BY CHRISTOPHER BURNS, MEMBER, NCLIS GROUP OF EXPERTS

http://www.nclis.gov/govt/assess/worldlib.html

APPENDIX 25. FIRSTGOV: A PRELIMINARY ASSESSMENT BY WILLIAM H. PRICE, MEMBER, NCLIS GROUP OF EXPERTS

http://www.nclis.gov/govt/assess/price.html

APPENDIX 26. SURVEY OF SELECTED FEDERAL AGENCY POLICIES, PROGRAMS AND PRACTICES RELATING TO PUBLIC INFORMATION DISSEMINATION (SUMMARY AND INDIVIDUAL AGENCY RESPONSES)

http://www.nclis.gov/govt/assess/nclismsg.html
http://www.nclis.gov/govt/assess/respdiss.html

APPENDIX 27. SURVEY OF THE PUBLIC INFORMATION NEEDS OF DISADVANTAGED AND SPECIAL POPULATIONS (SUMMARY AND INDIVIDUAL ASSOCIATION RESPONSES)

http://www.nclis.gov/govt/assess/special.html
http://www.nclis.gov/govt/assess/respdiss.html

APPENDIX 28. PUBLIC INFORMATION RESOURCES MAPS

Compiled by the Federal Library and Information Center Committee (FLICC) and the Government Documents Roundtable (GODORT) of the American Library Association (ALA). The public information resources maps are listed on the Commission website, under 4. Panel and Board of Experts Communications at http://www.nclis.gov/govt/assess/assess.html.

APPENDIX 29. DRAFT PROPOSED EXECUTIVE ORDER

[121] [Should the fact sheets should be included in this appendix, or should separate appendices be created? I recommend keeping them together.]

APPENDIX 30. A BIBLIOGRAPHY OF GOVERNMENT INFORMATION DISSEMINATION RESOURCES, COMPILED BY NCLIS CONSULTANTS

http://www.nclis.gov/govt/assess/biblio.html

APPENDIX 31. A BIBLIOGRAPHY OF NATIONAL INFORMATION POLICIES

Compiled by Toni Carbo and University of Pittsburgh associates

APPENDIX 32. A COMPILATION AND ANALYSIS OF FEDERAL STATUTES PERTAINING TO PUBLIC INFORMATION DISSEMINATION

Complied by Jane Bortnick Griffith, Harold C. Relyea and Frances A. Bufalo of the Congressional Research Service in 1996, and updated by NCLIS consultants and staff.